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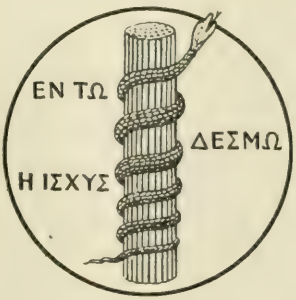

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EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES AND NEWS.

PROFESSOR Alexis Thomson, who since 1902 has been identified with the editorial conduct of the *Journal*, has resigned the Editorship, and the Directors have invited Mr. Alexander Miles to fill his place.

Honours to Sir William Turner.

THE intimate association which has so long existed between Town and Gown in Edinburgh has been strengthened by the gracious action of the Corporation in presenting the freedom of the city to the Principal of the University, in the person of Sir William Turner. The cordial tribute paid to Sir William by the Lord Provost, in making him a free burgess of the city, made it abundantly clear that the honour is in no sense merely an official one, but is an expression of the esteem in which his personal worth and work are held by the citizens.

On the same day the Merchant Company of Edinburgh admitted Sir William an Honorary Member in recognition of his great services to the cause of higher education—a cause in which that ancient Corporation has itself played so honourable a part.

In name of the medical profession we desire to offer our congratulations to Sir William Turner on these signal acknowledgments of his achievements as a scientist, a University administrator, and a public-spirited citizen.

Opening of New Hall of College of Surgeons.

AT a banquet held last month, the Earl of Rosebery formally opened the additions to the Museum and Library, and the new Hall of the Royal College of Surgeons. Special interest was lent to the occasion by the conferring of the Honorary Fellowship of the College on Lord Rosebery, who reminded his audience of his hereditary association with the College, his forebear Gilbert Primross having been its first recorded Fellow, and other members of his family having been registered on its roll. In a passage of great eloquence his Lordship associated the new Hall with the name of Lord Lister—"a surgeon to whom the whole universe owes a debt of gratitude"—a happy inspiration which might well find permanent expression.

The President (Mr. J. M. Cotterill) and Fellows are to be congratulated on the completion of this important work; and the Secretary (Dr. Mackenzie Johnston) and the Architect (Mr. J. F. Balfour Paul) on the success which has attended their untiring efforts.

The Late Professor Cunningham.

A LARGE and representative gathering met in the court-room of the University on Wednesday, 15th December, for the purpose of inaugurating a scheme to found a memorial to the late Professor Cunningham. Principal Sir William Turner occupied the chair, and many representatives of the University Court, the Senate, the lecturers, and the general public were present. The President of the Royal College of Surgeons proposed the principal motion in favour of the foundation of some permanent memorial of the late distinguished Professor. It was unanimously adopted, and the meeting thereafter informally discussed the best form of memorial to be adopted. It was stated that the University of Dublin also had the subject under consideration, and that the committee in charge of the movement there had expressed themselves as favourable to a suggestion that a similar kind of memorial should be founded in the two Universities. A large general committee was elected, and it was arranged that after the Christmas vacation it should be called together in order to determine finally the details of the scheme, and to appoint an executive committee to carry it out.

December Examinations.

IT is now generally admitted, alike by teachers and students, that the new curriculum has not proved so satisfactory as was expected. In many respects it is an improvement on the older arrangement, but difficulties have arisen which perhaps only a working trial could have brought to light. The chief fault seems to lie in the fact that there are too many opportunities afforded to the student of appearing for his professional examinations, and that the periods at which the examinations have been fixed have not been well chosen. Student nature being what it is, the subject of examination immediately imminent will always absorb attention, and, although in no sense oblivious to the danger of neglecting other subjects, the student cannot avoid the temptation to run the risk that is more distant rather than that which is immediately ahead of him. The steady, hard working student—and in the Edinburgh School we think this type still forms the large majority—sincerely regrets the necessity for this choice, and would willingly forego any supposed advantage to be derived from passing his examinations in small instalments, if an arrangement could be made by which he would be enabled to pursue his studies free from the constant incubus of a near examination.

The redundant sitting appears to be that in December, which falls

practically in the middle of the winter session. At every stage in his course the student finds his work interfered with by this arrangement. The examination in Physics causes him to neglect Chemistry during the first term of the winter session. In the middle of the third winter he is faced with the Anatomy examination, and his attention to Pathology and Surgery is suspended. The most serious interruption, however, comes in the final winter, when the December examination in Midwifery again leads to a break in his attendance on his systematic classes, and, what is still worse, on his clinical work in the hospital. In this way surgery fares especially badly, being interrupted both in the third and in the final year. Not only is the first term in these various courses to a large extent wasted, but the student is never able to make up his leeway, and the second term suffers also.

From the teacher's point of view this state of affairs is no less regrettable. What can be more depressing than to attempt to teach a large body of men whose attention one knows is concentrated on some other subject, or to see one's class daily becoming smaller and smaller as the date of some examination approaches? The stimulus derived from sympathy and common interest is withdrawn, as well as that derived from numbers, and the lecture or clinic becomes a formal, soulless performance, from which neither teacher nor taught derives either profit or pleasure.

It is not for us to present a cut-and-dry plan by which these difficulties can be overcome. We have reason to believe that the matter is receiving the serious consideration of the University authorities, and we sincerely trust that before another winter session begins, steps will have been taken to prevent a recurrence of what is a serious obstacle to the efficient teaching of various important subjects in the curriculum. Any working arrangement which ensures a winter session unbroken by professional examinations will receive the cordial welcome and support of all the teachers in the school. Whatever other changes may be found necessary, we trust that the December examination in Midwifery will be abolished, and that this subject will be taken in its natural place with medicine and surgery during the last summer session.

In this connection it is, we think, open to discussion whether the lengthened vacation at Christmas is an advantage. We are inclined to think that to the majority of students a break of four weeks in the middle of a winter session is too long.

Such an amendment of the existing course as we desire would neither obviate nor prejudice the consideration of that wider scheme of reform which has recently been placed before our readers in the October number of the *Journal*. From its comprehensive nature such a change, if it is to be brought about, will require long and careful consideration by all concerned, and the time devoted to this will be

well spent. The state of matters to which we now draw attention is clamant, and calls for immediate action.

Medical Teaching in Edinburgh.

No one who has the real interests of the Edinburgh Medical School at heart can shut his eyes to the fact that there is considerable room for improvement in the arrangements for utilising the wealth of teaching material available, and we have not hesitated in the past to point out the lines on which we think certain reforms should be made. We do not at present intend to revert to that subject, but we feel bound to comment on certain statements which have recently appeared in the columns of the *Scotsman*, for they are, in our opinion, calculated to leave an erroneous impression on the minds of those who are not intimately familiar with the subject of medical education.

The Medical School of Edinburgh, more perhaps than any other school in the country, is a highly complex organisation, and a series of articles by one who is obviously unfamiliar with the problems, based on interviews with "eminent medical men," "educational authorities," and "persons interested," must, of necessity, present the subject in imperfect perspective. Some of the statements made cannot be allowed to pass unchallenged. It is stated in the fourth article of the series, for example, that, "There are teachers, a medical authority stated, who say that the arrangements and conditions of teaching now are exactly the same as twenty years ago." It is true that within that period only one new chair has been founded—that of Public Health—but lectureships have been established in Dermatology, Gynecology, Laryngology, Tropical Diseases, Applied Anatomy, Clinical Surgery, Bacteriology, as well as in other subjects. The number of assistants, demonstrators, and tutors has been greatly increased, and although much yet remains to be done, these changes make for more efficient individual teaching. Notable additions have also been made to the accommodation for teaching and to equipment.

In the Royal Infirmary these twenty years have seen accommodation provided for all the special departments, in most cases by the erecting of new buildings, in the rest by rearrangement of available space. Five new operating theatres have been built, and those previously existing have been modernised. The Surgical and Medical Out-patient Departments have been entirely reorganised. The Museums of the Royal College of Surgeons and University have been rendered more valuable, not only by extension but by the provision of really useful catalogues kept well up to date.

Those who are anxious to see further reforms in the University (and we count ourselves among the number) gladly acknowledge that much has already been done, and recognise that the case for reform must be seriously prejudiced by statements which are so easily controverted as that of this anonymous "medical authority."

The writer of these articles, or his informants, must have had a singularly unfortunate experience of young Edinburgh graduates. We have no desire to follow him in his comparison between the "Edinburgh man when he leaves his 'Varsity" (*sic*), and his London compeers, but from the constant demands which are made from the South for Edinburgh graduates as house-surgeons and assistants we conclude that his opinions are not generally shared.

Comments are needless on such statements as that "Bacteriology is useless to a general practitioner," and that "a man who is going into general practice never has any need for most of the pathology he has to learn." When the writer asks the question, "What is the use of a man who has to make his living as a general practitioner spending three months giving electric shocks to the muscles of moribund frogs?" we answer, None, but we add that the Edinburgh student does no such thing. The course of experimental physiology consists in attendance for four hours a week for one term of ten weeks, and only during a small part of it is the student employed in the way suggested. Even were it otherwise, the time would at least be as usefully spent as that devoted to practical zoology, where for ten hours a fortnight during a term the student is concerned with frogs and other lower creatures which are admittedly dead, and this arrangement the writer of the article thinks "needs no alteration."

In what we have written we make no complaint that the affairs of the Edinburgh Medical School have been subjected to criticism, nor of the tone or spirit of these articles. We frankly admit that they were friendly in intention, and we believe that they may do good. Our only regret is that our contemporary, usually so well informed, should have given that wide publicity, which publication in its columns affords, to statements which are so misleading as those we have commented upon.

Two Fallacies regarding the Medical Inspection of School Children.

THE measures recently taken by the Merchant Company to secure the medical inspection of the children attending their schools have called forth the complaint from some parents that *their* children had no need to be inspected, however much inspection might be necessary for the children of the slums. This complaint voices a fallacy which it may be worth while trying to dispel. The fallacy is that unsuspected disease is only likely to be found in the children of careless or very unobservant parents. Those who entertain such an idea not unnaturally resent the suggestion that their children, concerning whose health they are quite satisfied, should be subjected to periodical inspection.

As a matter of fact, of course, unrecognised disease is by no means confined to the children of the poor, the careless, or the unobservant. Medical inspection in Britain, we must remember, did not begin in the

elementary schools, but in the great public boarding schools which are attended by the sons of the wealthy. In some of these schools—notably in Rugby—there has been for years a careful medical examination of every boy on entrance, and Dr. Dukes published, nearly two years ago, the results of his inspection of 1000 boys. We have previously referred to his observations, but it may be recalled that they furnished ample, indeed startling, evidence of the necessity for the systematic examination of all boys, no matter how great their home advantages, and no matter how healthy they appear.

Another fallacy about which we shall hear a great deal from those who dread the advance of Socialism, is that universal medical inspection of school children is a great step towards the undermining of parental responsibility. As a matter of fact, however, medical inspection, *per se*, has no bearing on parental responsibility one way or the other. It no more undermines a parent's responsibility to have his child looked at by a doctor than to have it looked at by a schoolmaster. The real question for the future will be, what is to come after inspection? So far as matters have gone at present, the sequel to medical inspection has most frequently been to bring home to parents some of the responsibilities which they had neglected. In London, for example, thousands of parents have discovered that they will be expected to attend to the cleanliness of their children's heads much more carefully than they have been in the habit of doing. So, also, with regard to many other conditions. Very many of the defects which are found among children result from faulty home conditions, from the ignorance, from the carelessness, from the laziness, of parents. The great opportunity which medical inspection gives to society is the opening of the door of the home. Through the open door must come knowledge for the ignorant, encouragement for the over-burdened, and a little judicious pressure for the obstinate and the idle. And the bearer of these must be the school nurse or health visitor. In New York it has already been found that a mere notice to the parents that certain defects have been discovered is very frequently disregarded. But when the notice was followed up by a visit from a nurse, who explained the nature of the defect which was handicapping the child, only 4·2 per cent. of the parents refused to secure the required treatment.

THE STUDY OF PSYCHIATRY IN MUNICH.[1]

By J. MACKIE WHYTE, M.A., M.D.,
Physician, Dundee Royal Infirmary; Physician for Cases of Incipient Insanity, Dundee Royal Infirmary, &c.

THESE jottings represent the impressions and observations of a general practitioner during a brief autumn holiday in the Bavarian capital. They make no claim to completeness or infallibility. For many of the facts I am indebted to the biennial reports of the Royal Psychiatric Clinic for the years 1904-7.

A German clinic deals with some special department in the field of medicine, and the name includes not only the subject taught, but the building where the instruction is given. It exists for three purposes: first of all and principally, teaching of students, and along with this, in complete harmony, research and treatment. The director is a professor responsible to the State for the money expended; the hospitals are entirely State supported. When Professor Kraepelin was called from Heidelberg to Munich he had the opportunity of putting up a building which might serve as a model, and it is a splendid monument of his capability.

THE PSYCHIATRY CLINIC

is a long four-storey building of plain but pleasing appearance, situated in the south-west district of Munich, where a great extent of ground is now covered by medical university buildings. Many of these are quite new, and embody the latest advances in hospital construction. Others are out of date. The Polyclinic, which will be open in a few months, promises to be the finest of the kind in Germany. The north side of the Psychiatry runs along Nussbaum-Str., and the entrance is here. The south side looks into small gardens and on other medical buildings; the wards are on this side, the corridors on the other. The ground-floor is mainly taken up with kitchens, attendants' rooms, and a small ward for six children, the two middle storeys with wards, while the top is entirely occupied with assistants' rooms and laboratories. The building, which was entered in November 1904, is quite up to date in regard to freshness, brightness, cleanliness, and comfort. The wards are small, varying in size, but none having more than

[1] Read at a meeting of the Forfarshire Medical Association.

ten or twelve beds. A few private patients can be received in single rooms. Plenty of floor space is allowed per bed; this has a good effect of itself; crowding leads to friction. As a rule, three or four small wards are in series with open-door communication, for convenience of nursing and classification. There are fitted-in wash-hand basins and movable baths on wheels; even the water-closet is in a corner of the ward, on a tiled part of the floor, surrounded by a low screen. I am assured this arrangement works very well, supervision being simplified, and there being no complaint of odour. The windows are protected with stanchions, which have a curve at the lower end so as to allow of window-boxes with flowers being placed on the sill. There are no isolation wards, though this system was adopted with some trepidation, as it was feared the population of Upper Bavaria was too irritable and quarrelsome to allow of its being a success. The quietness and order prevailing would be remarkable in any asylum, and are specially so here when the class of cases and the rapid changes are borne in mind. Acts of violence are very rare, and noisy disturbances do not much exceed what one finds in ordinary hospitals. Various factors contribute to this result, and in mentioning them I may remark that the best asylums in this country have no reason to be ashamed if a comparison were made. I have referred to the liberal allowance of space. Such expressions as "ruhige" and "unruhige" are avoided in describing sections, on account of unpleasant asylum associations. The home-like furnishing of the wards, the provision of wall pictures, &c., and the use of ordinary earthenware dishes help. So does the entire absence of beer or other alcoholic drinks, and this means a big revolution in Munich! Lemonade is substituted for beer, alike for patients and attendants, at a cost of only 1½ marks per head per month. The nursing staff is large, nearly 1:2, and even on the male side, where there are twenty male nurses, sisters have charge. I am sure the large number and close attention of the physicians must have a most beneficial influence too.

Excitement is Combated

first of all by rest, about three-fourths of the patients being kept more or less strictly in bed. In the reception and observation wards all spend most of their time thus, while the others, the quiet and convalescent, are, as a rule, up all day, and are encouraged to engage in some occupation. It is no doubt a pity that there is practically no ground for outdoor work, but ground

is too precious, and, generally speaking, when a patient is this length the hour of his departure is almost come. If excitement persists in spite of rest in bed, either wet packs or warm baths are used. The former is preferred in catatonic conditions where there is a certain amount of dormant automatism, but every suggestion of restraint, by tying or sewing in, is scrupulously avoided, and the packs are for this reason not kept on for more than two hours at a time. For all other excited cases the continuous warm bath (Dauerbad) is employed by day and by night, if necessary, without interruption for eight hours to eight days. On the male side there is a room with four baths, on the female a similar room, and to this has been recently added a smaller room with two baths. Sometimes there is a difficulty in getting maniacal cases to keep in the water, sometimes they plunge and dash about like seals at play, but it is marvellous how quickly they yield to the good-humoured, persistent voices of the attendants. Thus you find them eating, drinking, and sleeping in the water, glad to get down into the warmth if they happen to have raised themselves. Some have cushions to recline on, and weakly patients have an open-woven cloth beneath them. They generally indicate when they wish to use the water-closet in the corner. I saw cases that had recurrent attacks of excitement who spent many days in the water from time to time. The temperature of the bath is 35° C.; automatic signals are given if the hot-water cistern is too low (40°) or too high (60° C.), and a thermometer in the wall of the bath itself indicates at once to the attendant if the water is too warm. The mercury column at 40° touches a platinum contact by which a red electric light is turned on. Thus, it is believed, accidents through carelessness are *now* practically impossible, but in 1905 a moribund paralytic was fatally scalded, and a similar disaster occurred to a case of delirium tremens in 1907. In the latter case the male attendant was sent to prison for a month. The reports give many details about the difficulties that have cropped up in regard to the mechanical and other arrangements, and how they have been met.

Few drugs are used. Hyoscine for severe excitement, veronal (7½ grs.) and paraldehyde (℥j.) for insomnia, and amyl hydrate in status epilepticus about exhaust the list. A case of morphinomania I saw was getting bromide, with some opium, unknown to her. Oxygen and saline transfusion occasionally are useful, but not much good was got in cerebral syphilis from mercury and iodine. I am told that on an average not more than 3 or 4 cases

out of 112 (the average resident number) have a sedative at night.

Friends of patients are allowed very free access, with sanction of the physician; they are sometimes admitted even to the bath-rooms. In this way preconceived notions as to the horrors of an asylum are effectually dispelled, and no noteworthy inconvenience has occurred.

The Medical Staff.

I am sorry I did not see the distinguished director of the clinic, as he was absent on holiday. The impress of his personality was everywhere evident. He is the founder of a powerful school of psychiatry. His classification is widely accepted in Germany and in France. He has done more perhaps than anyone to bring order out of chaos, and apply scientific methods to his subject. By his clinical insight, his methods of analysis, his graphic descriptions in numerous writings, and his methods in experimental psychology he has greatly contributed to the buoyant spirit of hopefulness which is the dominant force in psychiatry to-day. His staff consists of an Oberarzt, Dr. Rüdin, and ten or twelve assistants. Some are intern, some extern; some are paid, others are voluntary; the scientific side has its own men. One assistant is deputed by the War Office. From time to time there is a three months' exchange of an assistant with an assistant in the asylum at Eglfing. The large number of assistants is partly explained by the great development of specialism in Germany, and by the custom which requires that specialists should spend three years in advanced study after graduation. Every morning at ten the staff have a conference in the library. This room, by the way, is an essential part of every clinic, and here you have all the specialist magazines and journals and an excellent supply of books. After the conference the visit is made by the director or his representative, half the clinic being seen daily. Dr. Rüdin seemed to make a point of getting as closely as possible into touch with the mind of each patient; one felt that a kind of personal magnetism was at work. When he wished, the assistants narrated or read details of the cases. The assistants take the cases or review them in special rooms, and I need hardly say they are taken with absolute fulness; the cytological condition of the spinal fluid and the Wassermann reaction are tested wherever there is indication. After the case is complete a double *résumé* is written out—one copy for filing in the clinic's archives, the other being used for clinical work. The former is arranged alphabetic-

ally, the latter according to diagnosis. I take this opportunity of acknowledging the great kindness and courtesy of Dr. Rüdin and the members of staff with whom I came into contact.

The Scientific Service.

The immense importance of this department is made clear by the variety and extent of laboratories, the number of workers—some of them already distinguished—and the very large amount of published work. The anatomical rooms are in charge of Dr. Alzheimer, with thirteen work-places all occupied. Six rooms are used as psychological laboratories for investigations in experimental psychology, both in the healthy and in the mentally affected. Here are instruments of many varieties for measuring capacity for perception and observation, for reaction-time examinations, for investigating psychomotor functions and reflex processes, sensibility to touch, differentiation of sensibility, depth of sleep, speech, writing, and so forth. Many of these instruments are constructed according to the express design of the observers. There are clinical laboratories for examination of blood, of spinal fluid, of the serum reaction according to Wassermann, and of metabolic and other processes. The output of work is remarkable. In the report for the years 1906-7 a list is given of thirty papers read at the scientific evening meetings held at the clinic, besides thirty-six papers published otherwise.[1] There is a very active intellectual life among the doctors, and into it are drawn the staff of the two neighbouring ordinary asylums. An attempt is made to follow the history of cases that have passed through the clinic; this has been possible only in certain lines, as the work, if done completely, was found to be much beyond the capacity of the staff. But it is considered that clinical investigations without thorough following up of the patients may be regarded without exaggeration as nearly

[1] The titles of some of these papers will give an idea of their wide scope:—"Different Forms of Cerebral Syphilis (Anatomically);" "Phonetic Investigations;" "Race-Biology and Psychiatry;" "Examination of Intelligence in Recruits;" "Blood in Mental Disease;" "Pupil Investigations in Mental Disease;" "Conditions of Coma and Stupor in Alcoholism;" "Blood-Pressure in Intoxication;" "Metabolism in Epilepsy;" "Sero-Diagnosis;" "Speech Disturbances of Dream;" "Clinical Peculiarities of Mental Cases from Large Cities;" "Psychological Investigations in Accident Cases;" "Medico-Legal View of Crimes done under Alcohol;" "Alcoholism in Munich;" "Hysterical Swindlers;" "Psychological Investigations in Manic-Depressive Insanity;" "Morbid Desire to Buy;" "Influence of the Compensation Act on the Course of Nervous and Mental Disease;" "Devolution of Nerve Tissue;" "Measuring Muscular Force;" "Presence of Syphilitic Antibodies in Cerebro-Spinal Fluid of Paralytics."

valueless scientifically. Some important outside investigations—as on the knowledge and power of observation of 500 soldiers, the effect of alcohol on target-shooting, the effect of beer-drinking on the children in Munich schools—have been carried out by members of the staff.

The Opportunities for Learning Psychiatry

in all known directions are naturally very great. Most of the work is clinical and practical; psychiatry in its relations to education and legal medicine is also fully dealt with. With the more advanced students Kraepelin takes up all the more difficult and doubtful cases, as exercises in differential diagnosis. At a post-graduate course (1907) the following was the programme (the number of hours being given in brackets after each subject): —Anatomy of central nervous system (6); normal and pathological anatomy of cortex (18); neurological demonstrations (8); clinical and forensic demonstrations (24); clinical investigation of patients (4); sero-diagnostic methods (3); cyto-diagnosis of cerebro-spinal fluid (3); facts and problems of degeneration (6); criminal psychology (7); clinical experimental psychology (6); physical clinical methods of investigation (6).

This course, it is admitted, made too great demands on the capacity of the hearers, though it was of the highest value to the lecturers themselves.

Cinematograms have been taken of the different catatonic and maniacal movements, grimacing, echopraxis, choreic movements, hysterical disturbances of gait, tremors, restlessness of delirium tremens, rhythmic movements of idiots, different forms of paralytic, epileptic, and hysterical attacks. They are proving valuable in demonstrating to students what may only rarely be witnessed in the wards, the only drawback to this form of instruction being the expense.

Classes of Patients.

In 1906, 1168 men and 664 women were admitted, and in 1907, 1278 men and 636 women. The great preponderance of males is chiefly due to alcohol, and in a less degree to epilepsy. Three social classes are recognised, the first two paying for their maintenance. The second class, at the lower rate, shows a strong tendency to increase, owing to the spreading confidence in the management. But as only the third or non-paying class is used for clinical instruction, the other classes will not be allowed to encroach much further.

The majority of the cases are kept for only a few weeks at most, but the director has discretionary power with some free beds at command, so that cases valuable for clinical instruction, such as paralytics, a cretin, or a Mongoloid imbecile, may be retained indefinitely.

The forms of mental aberration are, of course, classified according to the ideas with which Kraepelin's own name is associated. Alcoholism is at the head of the list; then manic-depressive insanity, epilepsy, and dementia præcox; next come hysteria, general paralysis, and psychopathia, while the cases of senile dementia, cerebral syphilis, arterio-sclerosis, traumatic mental disorder, and imbecility are comparatively infrequent. One term which occurs frequently in medical jurisprudence, *paranoia*, was diagnosed only four times in 1906 and 1907. It is applied to cases of progressive systematised delusional insanity, often lasting for many years; the subjects of it are far more frequently at large than in keeping. A case was admitted while I was in Munich, a man who had had delusions of persecution for some years, and who at last shot his house-porteress; there was some doubt as to whether this was a paranoia in Kraepelin's sense, however.

Of *alcoholic mental disturbances*, 630 were received in 1906 and 1907. The larger number of these (333) were brought by the police or their friends for simple intoxication; all alcoholics are being looked on by the laity more and more as mental cases. Most of these acute cases were discharged the same day or the next. Of course many of them had in addition the signs of chronic alcoholism. A visitor to Munich from this country is struck with the almost complete absence of ordinary signs of alcoholic excess. This is, no doubt, due not to the abstinence of the people, but to the light character of their favourite drink. Many of them make up for the low spirit percentage by taking beer in bulk, and it was found that over 60 per cent. of the admissions to the clinic suffering from chronic alcoholism and alcohol psychoses took more than 4 litres a day. In a large proportion schnaps was taken also, but in three cases of delirium tremens there was evidence that nothing but beer had been consumed. The beer-delirium took exactly the ordinary delirium tremens course. Speaking of the amount taken, the report says a man of 63, admitted for alcoholic delusions, had daily taken 30 litres of beer, along with 60 to 70 pfennigs' worth of schnaps, till 1890. He could not stand so much now on account of gout. A publican

up till four years ago had taken 30 to 35 pints of wine besides some litres of beer per diem. A thirty-year-old merchant, admitted for delirium tremens, had taken for 15 years his 5 litres of beer, and in his best years 20 to 30 litres of beer with much wine. He became bankrupt, and resorted to the cheapest grain spirit, putting away 15 large glasses daily. Finally a prostitute, since she began to ply "her lucrative profession" 6 years previously, took her 15 bottles of wine a day. Only fifty-eight cases of delirium tremens were admitted for the two years—a small number compared with towns even in North Germany, where beer is replaced by stronger liquors. Among these deliriants only one was a female, and the small proportion of 1 female to 10 males holds for the group of alcoholic psychoses.[1] The sudden withdrawal of drink in the delirium tremens cases had no bad effects. The other classes of alcoholics are alcoholic delusions and Korsakow's psychosis; the latter is a combination of polyneuritis with certain mental symptoms, the chief of these being interference with capacity for observing, confusion, and tendency to confabulation. In regard to the alcoholic delusion, the chief points, according to Kraepelin, are, after preliminary hyperæsthesia to sounds and tinnitus, the sudden onset of ideas of persecution and conspiracy, founded on hallucinations of hearing; the voices are distinct and usually scolding or threatening.

In the large group of *manic-depressive insanity*, Kraepelin includes four classes:—(1) purely maniacal; (2) depressive; (3) circular, a maniacal depressive phase being included in the clinical picture; and (4) alternating, cases showing well-marked maniacal and depressive phases, separated by lucid intervals. The depressive or melancholia class is the most common in Munich. The purely maniacal or depressive psychoses have the best prognosis, though they may last weeks or months.

Dementia præcox in 1905 occupied the second place in frequency, in 1907 the fifth; on the other hand, the manic-depressive group has risen from the seventh to the second place. Kraepelin acknowledges that many of the cases were formerly wrongly diagnosed as dementia præcox; with his further experience he is much more chary than he was about this diagnosis, with its much less hopeful prognosis. In the last report those cases of 1906 that were practically recovered at the end of 1908 are minutely analysed, and the lessons of caution and reasons for reconsidering the case carefully set forth. To this discussion I would refer those who feel interested in this important subject.

[1] Compare that with 1 to 2½ in this country!

Amongst several interesting points in relation to *general paralysis*, I would mention two or three. In regard to the diagnosis, the presence of considerable lymphocytosis in the spinal fluid obtained by lumbar puncture had, up to 1906, proved very valuable as an aid; only in three cases out of eighty was there no increase of white cells. It was specially useful in drawing a distinction between general paralysis, on the one hand, and alcoholism, or arterio-sclerosis, on the other, in the earlier days after admission to the clinic. Further experience confirms the value of this method. As large counting chambers are used, not much fluid is required, and the risk is infinitesimal. Syphilis is regarded in this clinic as the invariable precursor of general paralysis. Judson Bury and Ramsbottom have recently (*Quart. Journ. of Med.*, October 1909) described the results of using this method in twenty-seven cases of tabes and seven cases of general paralysis, and they found lymphocytosis in about 85 per cent. In the remaining 15 per cent. there was no lymphocytosis, and no evidence of antecedent syphilis could be obtained; in the others, it was highly probable.

In Munich, since the beginning of 1907, the sero-diagnosis of syphilis has been regularly employed. At present it appeared to me more interest was shown in this than in any other recent advance, and Wassermann's laboratory at Berlin is the Mecca of the scientific medical world. Dr. Plaut, who learned with Wassermann, examines for the Psychiatry Clinic as well as for the internal medicine and children's clinics; he also in his turn gives instruction to colleagues, some from abroad. The method, as you all know from reading about it, requires a specialist. A positive result is got both with blood serum and with spinal fluid in general paralysis, but in *lues cerebri*, as a rule, only with the serum, not with the spinal fluid. A negative blood reaction does not necessarily exclude brain syphilis, but it is believed to exclude general paralysis. If the blood reaction is negative, it is useless to try for the reaction in the spinal fluid. The positive result will exclude all mental diseases with no specific basis, some of which may quite well be confounded with general paralysis in its earlier stages. The method is being found of great value in regard to some children's diseases where there may be a doubt as to hereditary syphilis. I saw one child, a girl of nine, behaving irresponsibly, playing in no ordered way, chattering nonsense, who had no signs pathognomonic of general paralysis. She might have been classed as an idiot, but with positive Wassermann the diagnosis was general paralysis. There are about half a dozen juvenile general paralytics in the wards just now, all of course regarded as hereditary syphilitics.

Stuttgart.

At Stuttgart I was much indebted to the kindness of Sanitäts-Rath Dr. Fauser, who showed me over the insanity wards of the Bürger Hospital—a kind of workhouse infirmary. Dr. Fauser takes an enthusiastic interest in lunacy, and has written a good deal in this line. The Irrenabtheilung is only some eight or ten years old, and contains eighty beds. They are used only for acute cases; the cubic space is rather limited, and often the wards are more crowded than when I saw them. The doctor is an ardent believer in the continuous bath. There were four patients on each side in the baths; usually it is not found necessary to keep them there overnight, but sometimes even the ordinary washing baths are requisitioned. The attendants watch the temperature on a horizontal indicator alongside the screw-cocks for regulating the supply. The windows are protected by a diamond-shaped metal rod arrangement, which looks better than prison bars. The scientific equipment here as to microtomes, sterilising tubes, apparatus for cyto-diagnosis, Röntgen-ray installation, &c., was very good, and the Wassermann reaction is regularly tried for, samples of serum being sent to Ehrlich in Frankfurt. A report is got next day. Dr. Fauser has been working at the method himself in Heidelberg, and he was going to Wassermann himself in October.

Heidelberg.

The Psychiatry Clinic in Heidelberg has been going for thirty years; it is the oldest in Germany. Professor Nissl is at the head of it: Kraepelin was here before he went to Munich. The assistant-physician who showed me round said, though they used the Dauerbad they had not such a profound belief in its efficacy as obtained in some other places. This clinic is principally for instruction. Cases are kept only two or three months at the longest, unless for special reasons. The material is drawn from half of Baden; cases not improving are sent to the asylum at Ilmenau. The patients are classified on each side in three divisions: excited, observation, and quiet. The latest scientific methods (cytology, serology) are worked up by the assistants. There is nothing like the perfection of the Munich place, the great difficulty being, of course, to get money from the State.

There are now many first-class psychiatry clinics in Germany, and all the university towns aim at having them. Kraepelin's school is perhaps the most influential, and his influence is widely

spread, but Ziehen, at the head of the great Berlin clinic, is equally famous and equally pronounced in his opinions, while Sommer at Giessen and the recently deceased Wernicke at Halle may be mentioned as advocates of classification on somewhat independent lines. I must confess to a feeling of profound admiration for the German system as imperfectly outlined in this paper. The vast number of specialists, their scientific training, their enthusiasm in research, their laborious habits—these are but some of the factors which make it probable, nay certain, that Germany has before her much greater victories than she gained on the fields of France. One thing I would like to impress on my younger colleagues, and that is the paramount importance of a knowledge of German for those who wish to do good work in medicine. And let us all strive to help on our medical school by turning out such work as will bring it credit in the eyes of the world.

"ON RHEUMATOID ARTHRITIS."[1]

A Clinical Record of Two Cases, Presumably of Puerperal Causation.

By H. M. CHURCH, B.Sc., M.D., F.R.C.P.

Mr. President and Fellows,—This paper has been suggested by the unique specimen which I have just shown to you—a metal penholder eaten through by the perspiration from the forefinger of a lady suffering from rheumatoid arthritis.

Haygarth of Bath was the first, in 1805, to point out that the disease was distinct in its pathology from gout and rheumatism, though often overlapping and confounded with these diseases. Garrod, Charcot, and others long afterwards confirmed Haygarth's opinion. About a quarter of a century ago important contributions from the Salpêtrière appeared, in which Charcot gave comprehensive accounts of the clinical aspect of the disease. In these he pointed out the relation that exists between diseases of the spine and affections of the joints, the so-called chronic spinal arthropathies, as we meet them in Charcot's disease, locomotor ataxia, osteo-malacia, fragilitas ossium of advanced life, and this so-called rheumatoid.

The committee recently formed at Cambridge for the study of special diseases have initiated a new stimulus to the study of rheumatoid, and in their bulletins, in which are given the most recent clinical reports, solicit the aid of the general practitioner on the many questions involved. The bulletins give prominence to two views regarding etiology. One is, that the disease arises in the central nervous system, nervous exhaustion predisposing to spinal disease, more particularly if accompanied by any reflex irritation. The other is, that the disease depends upon a *materies morbi* absorbed into the blood-stream from some septic focus, and probably from the mucous membrane of the generative tract, which directly affects the joints. The committee incline to the latter view, that, namely, of the causation being from a chronic microbic infection.

The following two cases seem of psychical and nervous origin, though in one a chronic puerperal infection was unquestionably superadded and converted an ingravescent case into one of the utmost gravity. As the disease occurs almost invariably in women, and as in the one case it came on after a confinement and in the other after

[1] Communicated to the Edinburgh Obstetrical Society, December 1909.

a miscarriage, that is after a presumably puerperal cause, I bring them shortly before the notice of the Obstetrical Society. I do so also because in studying the literature of the subject I find that rheumatoid, regarded from a clinical point of view, is frequently associated with an uterine or ovarian abnormality, the reflexes from these organs affecting the functions of the cord and leading to dystrophies of the tissues, skin, nails, bones, cartilages, and muscles. The committee report that in their experience the onset of rheumatoid sometimes occurs after the birth of a child, perhaps about 6 per cent. only having to do with pregnancy and childbirth. But during my practice of over 34 years in Edinburgh, out of 3 severe cases of rheumatoid, 2 were associated with pregnancy. Milder cases and cases of stiff and painful joints of transient duration have also come under my notice associated with gonorrhœal and leucorrheal discharges.

The details of my two cases are given in full in the schedules forwarded to Dr. Strangeways, Chairman of the Cambridge Committee. I shall condense this record, therefore, and simply refer to the salient points, nor need I define anatomical details. The two cases ran somewhat parallel courses. Both are married ladies in comfortable circumstances, and were afflicted with the disease some years before the menopause. Both are now 53 years of age, 42 at the time of onset, each having been ill 11 years, and now improving in health. They are sensitive to atmospheric changes, and suffer most in windy weather. They had severe attacks of influenza previous to the onset of rheumatoid, and both ascribed their condition to the same direct cause, namely sudden shock to the nervous system near the end of the child-bearing period. The first labour in both cases was difficult and instrumental. They nursed their children, one having had 4, and the other 5, of a family. In both, the bony elements of the joints are enlarged and hardened, the articular surfaces eburnated, and presenting the characteristic deformity and nodosity arising from the peri-articular bony formations. The osteophytic outgrowth is moderate and does not exist to the extent characteristic of osteo-arthritis. Wasting of the muscles is considerable. Both are weak, sallow, and anæmic women, and suggest poor blood formation and deficient bone-marrow activity.

The less severe case is of gipsy descent, and had been a needlewoman before her marriage. The joints subsequently affected were in keeping with the tear and wear of this particular occupation. This is generally the case. In almost every rheu-

matoid the temporo-maxillary articulations, which are in constant use in speech and mastication, are early affected. The discomfort in the joints of this patient came on at once, and rapidly increased in intensity, beginning in the fingers and wrists and showing a tendency to progress centripetally upwards. Her illness followed the excitement when her youngest child took a series of fits. This brought on a miscarriage at the second month, from which, however, in other respects she recovered well, there being nothing abnormal about the discharge. This case can hardly be ascribed to microbic influence, and here it may be noted that her family have been peculiarly free from microbic diseases. Her joints are better in the evening and worse in the morning, the pain often being severe during the night. This appears to be in keeping with the diurnal variation in the alkalinity of the blood which, according to Schäfer, is lowest in the mornings and gradually rises in the afternoon. Pain is worst when alkalinity is lowest. Pain is aggravated in her feet and ankles after any effort to walk. This also is in keeping with Constein's statement that the alkalinity of the blood is diminished by muscular work (Schäfer's *Physiology*, p. 244). Apart from the infection of her joints in the upper extremities, there has been at times considerable tenderness and swelling about the manubrium sterni and its connections. The disease at an early date affected the cervical and dorsal vertebræ, causing radiating pain from pressure on the nerve roots, and interfering with the healthy function of the nerves supplying the muscles and bones of the arms. In her case sacral disturbances associated with the periodic appearance of shingle spots—an unusual feature—over the posterior sacral foramina have frequently been observed. These are still apt to appear after any worry. Just before conception with her last viable child she had a bad attack of influenza. The child was born at full time but is mentally defective. During this pregnancy she suffered much from thirst. The miscarriage above referred to, as initiative of the rheumatoid, was a subsequent event. It is important to note that her health was always best during the condition of pregnancy and also, after the onset of rheumatoid, that her joints were more comfortable during and after the menstrual periods. As in my second case, she had always a great desire for butcher meat and felt the better of it. Her nails were brittle and came away in flakes. Her skin soft, glossy, and anæmic. There never has been, in her case, asthma, gastric crises, or affection of the special senses, except periods of anosmia, her sense of smell on one occasion being

lost for nine months. Her knee-jerks are hypersensitive but Babinski's test is negative.

My second patient presented a much more distressing condition. At least forty of her joints were attacked, which rendered her for years altogether helpless. A creole, she had spent the first nine years of her life in the West Indies. There was a gouty history both on the father's and mother's side, while she herself had suffered from attacks of what she called "gout" since before her marriage. A long engagement of five years—"a bad thing"—seems to have strained her. Indeed she traces her ill-health back to that long time of waiting for her marriage. She had 4 children. During her last pregnancy she took a course of medicine from a quack for some weeks. This was regrettable, and probably had to do with subsequent complications in mother and child. Her last child she nursed for a week, but the milk "seemed injurious" and brought on convulsions in the child, which suddenly arrested the secretion. The attack of acute rheumatoid came on soon after this confinement. That there was superadded to shock a septic causation is undoubted. Five months after her confinement she was prostrated with swelling and tenderness of her joints, the ball of the great toe being the first seat of acute pain. So sudden and general was the onset as to suggest a septic invasion. For four or five months she was absolutely rigid, and for years, on account of pain in her joints and in her back, could not turn herself in bed. The hip-joints and spine were not affected. As in the former case, during the child-bearing period of life her health was always best during pregnancy, and her joints in the years of rheumatoid most comfortable during and after her periods. Now, 12 years afterwards, she has recovered sufficiently to be taken out in a bath chair, but with atrophied muscles and distorted and thickened joints. The muscular atrophy first appeared in the calf and then in the forearm, and did not come on, she avers, until she had been helpless for some time. She has Babinski's sign well marked, the extensors contracting at once under slight irritation of the soles on both sides—a usual sign of some degeneration of the pyramidal tract of the cord. The special senses of taste and smell are impaired. Having good teeth she masticated well, but she suffered from persistent constipation and offensive stools. In neither case was there any pregnancy after the onset of acute rheumatoid. There is no family history of cancer, nor any lesion of the heart, spleen, or kidney, though there always was hyper-

acidity of urine. A point of clinical interest, carefully attested, may be mentioned here, that during menstruation the excretion of urea in 24 hours was almost 100 grs. less than it was 3 days after the function was over. In neither case was there any history of gonorrhœal infection, and although only by gonorrhœal opsonic index examination can one be quite sure on this point, I think that infection has been carefully excluded. It has to be remembered, as Dr. Strangeways points out, that the gonorrhœal micro-organism is by no means the only one that might cause rheumatoid. In the first case there never had been any abnormal vaginal discharge. After her miscarriage everything was normal, so that her case we may look upon as one arising from nervous shock, unless a microbic factor may be brought into line with her influenzal attack. But it is different in this second case, where there was undoubtedly a chronic puerperal infection. She, before her last pregnancy, had a large, flabby, hyperæmic uterus and considerable menorrhagia, for which she consulted a gynæcological specialist. Her last labour was quick and easy enough, but she made a bad recovery and had much lochial discharge. Soon after delivery she had the shock of seeing her child in fits, and 3 weeks later phlegmasia alba dolens attacked the limbs, the left limb specially, from which she suffered much pain, the one limb continuing swollen for about a year. Three months after the commencement of the phlegmasia, and 4 months after the birth of the child, her life was endangered by a prolonged attack of pleurisy with effusion, and while recovering from this came the sudden onset of rheumatoid, which totally prostrated her. The uterus continued large and congested until the menopause at 46, and until then she complained of much uterine and ovarian irritation. Since the menopause her condition generally has improved.

Dr. W. M. Ord, in a paper read before the Clinical Society in 1889, relates a case where the patient's joints, as in both my cases, were always relieved by menstruation. He looks upon this case, however, rather as a paradoxical one, and thinks that menstruation more often increases than relieves the pain in the joints. He instances a woman with a large, flabby, hyperæmic uterus, similar to the case I have referred to, who had painless menorrhagia, but at the advent of each period the patient was crippled with arthritis in hands, wrists, and knees. In this paper Dr. Ord analyses 33 cases. In 3 of them the rheumatoid affection was limited to that side of the body on which there was ovarian

pain and tenderness. In many of them he noted a kind of ebb and flow between the arthritis and the uterine irritation. He noted, too, the frequent relation that existed between dysmenorrhœa and the paroxysm of rheumatoid. Of one case he says "the affection of the joints, although persistent, was regularly developed paroxysmally immediately before, throughout, and for a short time after each menstruation, and as regularly remitted in the intervals." He goes on to say that, after the uterine conditions had been effectively treated, "the patient, whose life had been a burden, who was wasted, sallow, anæmic, and hysterical, is now an active, happy, and decidedly well-nourished member of society." It is important to notice that none of Dr. Ord's cases were associated with amenorrhœa, but always with hyperæmic conditions. In looking into obstetrical literature, one finds such titles as the following:—"A Case of Acute Inflammation of the Left Shoulder Joint, Fifth Day after Delivery" (*Medical Times and Gazette*, London, 1867); "Cases of Severe Affections of the Joints after Parturition connected with Uterine Phlebitis" (*London Medical Gazette*, vol. iii. p. 663, 1828); "On Secondary Affections of the Joints in Puerperal Women" (*British Medical Journal*, p. 188, 1858); "Puerperal Inflammation of the Articulations of the Pelvis" (*British Medical and Surgical Journal*, vol. lxix. p. 262, 1863), and so on. Since careful antiseptic precautions in obstetric practice have become general, few such records are to be found.

Fidgets was the cause of much distress in one of my patients. Myelitis, with wasting of muscles, and other sequelæ, may in bad cases be lit up by continuous irritation passing along the sensory nerves from the uterus to the anæmic and irritable spinal cord. Gowers (*Diseases of the Nervous System*, vol. i. p. 381) supports the views advanced by Paget, Charcot, and others as to the reflex nature of the changes occurring in the cord, and considers that the wasting of muscles is accompanied by an increase in the myotatic irritability. He considers the condition like that which results from slight degeneration of the pyramidal tracts. Post-mortem appearances of the cord in rheumatoid will be touched upon later.

There is thus in this disease an intimate reflex relation between the generative organs and the spinal cord. Bearing this in mind, the uterus and ovaries must in every case be under careful observation from the appearance of the most initial symptoms. Some of these symptoms may be merely nervous phenomena

suggestive of a cerebro-spinal toxæmia, and not necessarily having much location in the joints. Even any chronic leucorrhœal discharge, not infrequently associated with joint discomfort, must be the subject of careful initial inquiry and treatment.

In one of my cases a series of fly-blisters were applied in succession 4 inches above the joints. This, an equivalent to the most modern serum therapy treatment, did good. Hot fomentations were always grateful. These have been shown to increase the leucocytosis in the tissue around the joints, and if rendered alkaline by the addition of a little bicarbonate of soda to increase the antidotal action of the blood against bacterial infection. Da Costa believes that the power of immunity, generally and locally, against infections may, to a certain degree, be measured by the alkalinity of the blood (Da Costa's *Hæmatology*, p. 91).

Local benefit is thus gained without administering large doses of alkali, which have a lowering effect upon the patient, and tend to increase the anæmia too manifestly present in every case of advanced rheumatoid. Haygarth derived much benefit from bleeding. Leonard Hill (*Further Advances in Physiology*, p. 173, 1909) justifies this method when he says "bleeding likewise may have been effectual by draining tissue lymph into the blood and so increasing the stock of bactericidal and opsonic substances."

My patients visited Bad Nauheim and Droitwich respectively, and had baths and massage in full measure, but beyond the temporary advantage of change of air, diet, and fine scenery, the disease continued much the same. Recent investigations show a close relationship between radio-activity and the phenomena of ionisation. This being so, radio-active waters, such as Bain-les-Bains, should theoretically favour regeneration of the tissues and relief of pain. After return home hot air baths applied by Greville's electro-thermic generator, 200 to 450 for three-quarters of an hour, by Dr. Webster were attended with considerable benefit. What did most good, however, was by means of cataphoresis, introducing into the tissues about the joints iodide of potassium, which alleviated the pain and reduced the swelling. This treatment seemed to be restoring the power of locomotion when unfortunately a breakdown in the patient's health from a "chill" took place, which prevented her travelling from the country to town where Dr. Taylor had kindly undertaken the cataphoresis. A solution of K.I. in abadon or in folds of lint was placed round the affected joint, the negative electrode suitably

attached round the joint, while the positive electrode was placed over the spine. The current was allowed to pass for one quarter of an hour every day for a week, and, after that, every second day, while arsenic was taken internally and massage carried out at home by a capable nurse.

Dr. C. F. Baillie, in a recent paper entitled "The Treatment of Rheumatic and Rheumatoid Arthritis by Radiant Heat and Cataphoresis" (*British Medical Journal*, 2nd January and 8th March 1909), claims considerable success from the application of radiant heat, as near as possible like sunlight, giving a spectrum from the ultra red to the ultra violet. "I am quite convinced," he says, "that an absence of the violet and ultra violet rays in the ordinary apparatus is largely responsible for the weakness of sedative effect and slow relief of pain, whereas absence of yellow green rays may be responsible for only slight stimulation of metabolism." He claims, moreover, that this radiant heat tends to destroy micro-organisms, and shows that leucocytosis in the blood about the joints is increased. After 20 minutes' exposure to radiant heat he employs cataphoresis much in the manner above described, using only a 2 per cent. solution of a salt, such as lithium iodide or sodium salicylate, the cataphoresis carrying the "ions" of these salts into the tissues. He attaches much importance to the same medicines, during the course of treatment, being taken by the mouth, but is of opinion that the "ions" of these medicines are more efficacious when introduced directly by cataphoresis around the affected joints. He gives several cases in support of this view.

Dr. Curtis Webb of Cambridge (*British Medical Journal*, 17th April 1909) always employs cataphoresis, but is sceptical as to the good results being due to the introduction of "ions," and thinks that the altered metabolism and the improvement in the nutrition of the joints may simply be due to the passage of the electric current itself setting up vasomotor changes, and to modifying the nutrition of the joints. As regards the pathology of the disease, Dr. Webb believes that a tropho-neurosis is set up in the joints by the absorption of toxins from the alimentary tract.

Many remedies were given internally to my patients. Those that are generally useful in rheumatism and gout were useless to them. Arsenic and iron were, however, useful. Garrod writes: "I have no hesitation in assigning to iodide of iron the first place among the medicines which I have employed in rheumatoid"

(*System of Medicine*, Allbutt, vol. iii. p. 101). It has to be taken perseveringly for a long period, for months or even years.

Dr. Gibson kindly showed me a few cases lately in the Royal Infirmary in which 30 min. of fibrolysin injected hypodermically every second day had done much good to the joints in reducing fibrous thickening.

Dr. Wakefield, in the *Cambridge Committee Report*, states that Bier's method of inducing hyperæmia is employed in such cases at the London Hospital with considerable success (*Cambridge Committee Report*, p. 83, 5th November). Many of the cases coming were severely affected, and, as a last resort, this method was tried. In only one case did there seem no relief by congestion.

On three occasions one of my patients was put deeply under chloroform narcosis, both with the view of ascertaining the degree of movement in the stiff and locked joints, and, if possible, to break down adhesions, and also in the belief that the inhalation of chloroform, on account of the leucocytosis which it temporarily produces, was antagonistic to microbic action. Our former president, Dr. James Ritchie, in his *Résumés on Osteomalacia*, refers to cases of that disease which were cured by chloroform narcosis, and quotes Petron, who believes that osteomalacia is caused by a micro-organism, and advocates the use of chloroform inhalation for three-quarters of an hour as a germicide (*Résumés Osteomalacia and Osteomalacia Carcinomatosa*, p. 24). But in my case of rheumatoid this treatment, except for diagnostic purposes, did no good. I refer to osteomalacia, because in some respects rheumatoid may be brought into line biologically and pathologically with osteomalacia, though the physical appearances are dissimilar or even diverse. In rheumatoid the bone becomes hard, in the other soft; in the one, too much alkaline phosphates are present, in osteomalacia too little, both faulty chemical conditions being probably due to ovarian influence. Dr. Ritchie quotes Curatulo to show that, after the ovaries have been removed in a bitch, the secretion of phosphoric anhydride is diminished by one-half. "Curatulo," he says, "believes that this change is due to a diminished oxidation of phosphorus existing in an organic form in the tissues, which being stored by the system and combining itself with lime and magnesia would accumulate in the bones in the form of phosphate of lime and magnesia" and thus harden the bones already soft. At present, apropos of this, I have a patient in whom both uterus and ovaries were removed many years ago

and who has now some enlargement and thickening of the bones of the hand and of the face, and I may say also some psychical change. In osteomalacia, as in pregnancy, there is an increase in the redness of the bone-marrow. In rheumatoid the redness is diminished. In osteomalacia pregnancy increases the disease, but in rheumatoid, pregnancy, when it does occur, ameliorates. In the light of the preceding facts might there not be an advantage to the rheumatoid patient in increasing the elimination of phosphoric acid from the system by stimulating the ovarian secretory influence, and might this not be assisted by administering ovarian extract?

Acting on physiological lines, pituitary extract in the form of tablets were given for some time. A fancied resemblance between the case and a case of acromegaly induced me to try this remedy, on the hypothesis that this organic substance might supply to the blood an internal secretion which has to do with the regulation of bony growth. Schäfer states that Schiff obtained a markedly increased excretion of phosphoric acid on feeding animals with pituitary tablets (Schäfer's *Physiology*, p. 946). "From different experiments we may assume," says Pierre Marie (*Brain*, vol. xii. p. 59), "that the pituitary body influences some of the tissues, especially bone and the tissues of the nervous system." But by this treatment there seemed nothing to encourage a continuance of it. That no marked good followed, was perhaps due to the fact that the pituitary was not given hypodermically.

In regard to the sweat—in the graver case it was profuse, especially in the early stage of the disease, and always, like the urine, intensely acid. Professor Hunter Stewart kindly made a careful analysis of a quantity gathered from the limb while in the hot air bath. He reports that neither uric acid nor urates were found. Urates are generally found in the sweat in gout. In gout, also, there is often present leucocytosis, while in rheumatoid, at least in the case which I report, there is diminution in the larger corpuscular elements of the blood, two leucocytes only being found in a field of pale reds. It is not unlikely that this distinct leucopenia was due to destruction of bone-marrow occurring late in the disease. Blood counts, in early cases of rheumatoid, present little departure from the normal. Uric acid formation—though even in true gout there cannot be made out any lowering of the alkalinity of the blood—together with leucocytosis, are points which distinguish gout in its common forms from rheumatoid—diseases which in olden times were confounded.

Da Costa (*Hæmatology*, p. 347) points out that there is an increased blood activity in gout, but a diminished activity in rheumatoid.

Sir Dyce Duckworth recognises a gouty neurosis that may be primary or central. There is, he thinks, a functional disorder of a definite tract of the nervous system which he is inclined to localise in some part of the medulla oblongata (Quain's *Dictionary of Medicine*, p. 748).

I have made this digression regarding gout because so often a gouty history precedes or accompanies rheumatoid. And, as in the case of acromegaly, osteomalacia, and perhaps gout, we may predicate a hypothetical nerve centre or centres associated also with rheumatoid. On this point Garrod says "that the joint lesions are of dystrophic nature, and are dependent upon disorders of the nervous mechanism which controls the nutrition of the joints" (*Twentieth Century Medicine*, vol. ii.). The argument brought forward in support of this view is based upon the similarity of the lesions of the bones which develop in the course of organic disease of the nervous system. So similar are the appearances, that rheumatoid has been mistaken for disease of the spinal cord.

Tribaulet and Thomas (*Bulletins de la Société Anatomique de Paris*, 1895) have reported the case of a woman who, after a miscarriage, developed a chronic arthritis, and in 18 months died of the disease. The autopsy showed a sclerosis of the posterior columns of the cord in the dorsal region, and of the columns of Goll in the cervical region, with degeneration of the posterior roots.

In both my patients poor health, the outcome of anxiety and strain for years, preceded the onset of rheumatoid. In both the general health, as has been stated, was better during the condition of pregnancy, when leucocytosis is normally present. In both butcher meat and generous diet was craved for after the rheumatoid invasion. Whatever tended towards an enriched corpuscular element in the blood, whatever increased the hæmoglobin value of the blood, brought greater well-being to these patients. Physiologic leucocytosis, induced by generous diet, and increased bone-marrow activity are therefore to be promoted. Halliburton states that the leucocytes produced by a full meal soon break down and feed the tissues. As the chief inorganic constituents of these leucocytes are the potassium salts, any acid not normally present in the blood is neutralised. Now certain American writers have demonstrated that there is in rheumatoid an excessive elimination

of organic acids in the urine (*American Journal of Medical Science*, vol. cviii. p. 1038). If this be so, increased alkalinity is to be aimed at. Difficult as it is to estimate the alkalinity of the blood, Schäfer states that it is most marked after food and during digestion (Schäfer's *Physiology*, vol. i. p. 144). A generous diet, for this reason, must be a prominent part of treatment, and this was found in both my cases to give a feeling of greater well-being than the administration of alkaline medicines. From the supposed association of rheumatoid with gout and excess of uric acid the error, a grave error, of keeping the patient on low and even vegetarian diet has not infrequently been made. It may be stated in this connection that lecithin, which is a powerful stimulant of general nutrition through the multiplication of the red corpuscles, is a useful addition to the food in maintaining healthy alkalinity.

Leucopenia, we have seen, is present in advanced rheumatoid, as in most other cachectic conditions. This diminution of leucocytes is warranted by the pathological changes in the bones. Dr. Shennan, Pathologist to the Royal Infirmary, has kindly pointed out the following passages in the writings of Kaufmann and Zeigler on the subject. The former says, under the heading of "Bone in Arthritis Deformans, Atrophic Resorption Processes": "Heads of bones become small and flattened. Bone-marrow, which takes the place of the absorbed trabeculæ, becomes lymphoid or gelatinous, or fibrogelatinous. It may also liquefy, so that cysts form filled with fluid. Occasionally in the fibrocellular material in the marrow here and there new cartilage and bone trabeculæ form" (Kaufmann, *Lehrbuch der Speziellen Pathologischen Anatomie*, p. 741, 4th August 1907). Zeigler gives practically the same description, in addition explaining that the cellular tissue in the marrow may break through the cortical layer of bone, and then the periosteum growing down through this defect acts as endosteum and from it develops the bony trabeculæ, &c., which Kaufmann mentions. He also states that the bone-marrow may have a normal appearance if the condition be not far advanced (*Spez. Pathologische Anatomie*, 11 Aufl., pp. 9, 277, 1906).

In advanced cases of rheumatoid there is usually therefore an exhaustion of the bone-marrow, with gelatinous transformation. In such circumstances Dr. Shennan suggests one would expect a somewhat low blood count of both reds and whites. We have also to take into consideration how often such patients develop Bright's disease or some other chronic affection which would also tend to produce anæmia, or even a cachectic condition such as are found mentioned by the American authors.

In almost all cases of rheumatoid in the acute stage which have been carefully studied there have been indications of intestinal putrefaction evidenced by an excess of ethereal and aromatic sulphates in the urine. Certainly regular treatment with blue pill did good. The urine in my cases on these points is now practically normal. Indeed the analysis, unfortunately done long after the acute stage was over, which was carefully made at the Royal College of Physicians' Laboratory, showed rather a diminution of uric acid, urea, and ethereal sulphates, the proportion of uric acid to urea being about 1 to 50.

Two attempts were made to demonstrate the presence of a hypothetic acid in the urine but without success. Some writers maintain that there is in the urine an organic acid pathogenic of rheumatoid. Two American investigators, Drs. Herter and Baldwin (*American Journal of Medical Science*, 1904), studied this point in 21 different patients and found an abnormal acid in each case. They demonstrated that with the abatement of symptoms of the disease this acid diminished, and cases are related to show, on the other hand, how, with exacerbation of symptoms, the number of acids was increased. When symptoms were quite in abeyance, this as yet unnamed acid disappeared. There might be much disability and rigidity of the joints, still if the disease was not progressive this acid was absent. Gastric and intestinal disturbance, together with this acidosis, were in proportion to the acuteness of the rheumatoid symptoms. It was pointed out, moreover, that as the various forms of organic acid are readily oxidised in the body, the amount formed is probably greater than the amount excreted. Kidneys and skin aid in this excretion of acid. Halliburton (*Physiology*, p. 581) quotes several observers to show that the salts in the sweat are in kind and relative quantity very like those of the urine. This being so, may not this hypothetical acid, which is engaging attention in the Clinical Laboratory, have been a factor in eroding to such a remarkable degree the metal penholder of my rheumatoid patient? The occurrence at least gives support to the belief that excessive acidity is a feature in the chemistry of this disease.

SOME REMARKS ON THE VALUE OF ACCURATE BLOOD-PRESSURE ESTIMATIONS.

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Prior to the introduction of the sphygmomanometer, palpation of the pulse and the sphygmograph were the only methods at our disposal for clinically estimating blood-pressure. The sphygmographic curve is undoubtedly a blood-pressure curve showing maximal and minimal pressures, but is useless as a guide to the accurate blood-pressure, lacking, as it does, any standard from which estimations can be made.

By means of palpation of the pulse one is only able to state that the pressure is "high," "low," or "moderate"—accurate determinations are impossible. One measures the blood-pressure as one might estimate the pulse-rate without a watch, or the severity of a case of anæmia without a hæmoglobinometer.

It is now well known that blood-pressure is dependent on four factors, namely, the energy of the heart, the peripheral resistance, the elasticity of the arterial walls, and the total blood-volume. All these may vary under normal conditions, and in disease may become greatly altered.

Without entering in detail into the changes that may occur in the blood-pressure in health, it must be evident that if observations are to be considered reliable certain rules must be observed. For example, mental and physical rest must be secured, since excitement, mental effort, anger, and pain are all found to raise blood-pressure, while grief seems to tend to lower it. All observations must be made with the patient in the same position, preferably the recumbent one, since posture exercises a considerable influence on the blood-pressure. Again, in following cases from day to day it is important to make one's determinations at the same hour, as the diurnal changes are considerable, the blood-pressure being generally higher in the afternoon than in the morning and sinking again towards evening. The mere digestion of a meal may raise the blood-pressure 5 to 10 mm. Hg.

If these points be observed—and they are scarcely more rigorous than the taking of the temperature requires—it will be found that the results obtained are surprisingly constant, and

at the same time one is better able to interpret those changes which one finds in disease.

The method I have always adopted for the estimation of blood-pressure has been that of "circular compression" of the arm. This method was first introduced by Riva Rocci[10] in 1896, and is, in my opinion, the only accurate one. The objections put forward to it seem to me to fall to pieces after the results obtained by such investigators as Gumprecht,[7] Hensen,[9] and von Recklinghausen.[11] It has been proved by these and other observers that, provided one use an armlet 12 cm. wide, the error caused by the inner wall of the rubber bag and by the thickness of the tissues of the arm cannot exceed 10 mm. Hg, and can therefore be neglected. If, however, results are to be considered trustworthy and comparable one with another, certain precautions must be taken in the use of the instruments employed in this method. It will be seen that they do not involve any difficulty or the need of special skill. They are:—(1) The adoption of the 12 cm. armlet: (2) the careful adjustment of the armlet: (3) the absolute relaxation of muscles: (4) the recumbent position: (5) in cases of arterial degeneration the taking of the first "developed wave" as criterion (von Recklinghausen[11]): (6) the avoidance of œdematous parts. If these precautions are taken, the method of circular compression will be found to be completely reliable, sufficiently accurate for all clinical and physiological purposes, and capable of being manipulated with great speed and ease.

The instruments used in these observations were three in number. In cases in which it was only necessary to obtain a knowledge of the maximum systolic pressure, Mummery's modification of the Riva Rocci sphygmomanometer was used. When a permanent record of both maximum systolic pressure (M.S.P.) and maximum diastolic pressure (M.D.P.) was required, the sphygmomanometer of Erlanger, or that lately devised by Gibson, was employed. There are great advantages in this last instrument over those previously devised. While possessing all the advantages of Erlanger's, it obviates the necessity of following the descent of the mercury and of having one's finger on the patient's pulse. The instrument actually gives a graphic record of the absolute height of the manometric tracing. The return of the pulse is beautifully shown on the tracing by means of a special lever, while the actual height of the mercury column at this moment can be determined at any time by means of a millimetre scale.

Blood-Pressure in Arterial Sclerosis.—The relation which blood-pressure bears to arterial sclerosis, and in what measure a high pressure indicates the extent of arterial degeneration, is a subject which affords the sphygmomanometer one of its most useful fields, both as a diagnostic agent and as a guide to treatment. That arterial degeneration, speaking generally, has a tendency to be accompanied by high pressure is a fact which admits of little doubt. Whether this high pressure is the result or the cause of the arterial sclerosis is a question which, up to this day, has not been completely solved. In making blood-pressure estimations as a matter of routine on all patients I have frequently been surprised to find low pressures present in persons whose superficial arteries were hard and tortuous. On the other hand, high pressures are even more frequently found in persons in whom no arterial degeneration can be detected. I feel convinced, therefore, that the degree of degeneration of the superficial arteries can in no way be taken as a guide to the height of the blood-pressure.

I have tracings taken from a man, aged 68, whose brachial and radial arteries were as tortuous and rigid as a root of ipecacuanha, and yet whose maximum pressure was only 130 mm. Hg. I have others from a man who showed marked degeneration of all his superficial arteries, and whose maximum pressure was as low as 100 mm. Hg. Geisböck[5] has found advanced degeneration of the superficial arteries, and even of the whole thoracic aorta, in persons whose blood-pressure during life was always within normal limits.

Allbutt[1] is a strong supporter of the view that in many cases arterial sclerosis is a result rather than the cause of high blood-pressure. The arterial degeneration found so frequently in cases of diabetes, Bright's disease, and gout is due in all probability, not to the disease itself, but to the high pressure which is generally present.

It has been shown by many observers that hypertrophy of the heart and high blood-pressure are dependent not so much on arterial sclerosis in general as on the distribution of the sclerotic processes in particular. Physiologists have proved that the height of the blood-pressure depends on the state of the vessels of the splanchnic area, and that these vessels dilate if the pressure be raised to such a height as to embarrass the heart. Post-mortem examinations have shown that, while fairly advanced degeneration of the superficial arteries may cause no evident change in the

heart muscle, even a slight degree of degeneration of the vessels of the splanchnic area always causes the heart muscle to hypertrophy.

It is in the diagnosis of such concealed arterial sclerosis that the sphygmomanometer is strikingly useful. Without it one can at the best only discern arterial sclerosis of the larger superficial vessels: with it one comes into closer contact with the most important arteries, those of the abdominal viscera, which previously were out of our reach.

The early recognition of rising blood-pressure is of the utmost importance. The timely use of therapeutic measures to prevent the strain on the circulatory system, and its consequent breakdown, may be the means of prolonging many lives, while when arterial sclerosis is once established treatment can be little better than symptomatic.

The type of patient in whom one most frequently finds this condition is the man who leads a sedentary life, takes little or no exercise, and both eats and drinks to excess. He frequently has emphysema, and is nearly always obese, and is therefore the very type in which palpation of the pulse is most deceptive, while the hypertrophy of the heart and accentuated second aortic sound are almost impossible to make out.

Blood-Pressure in Valvular Heart Disease—(a) *Aortic Insufficiency.*—It is in this disease, more perhaps than in any other, that the great advantage of those instruments which measure accurately both the systolic and the diastolic pressures over those which measure only the one or the other becomes most evident. The exact determination of the pulse-pressure (*i.e.* the difference between maximum systolic and maximum diastolic pressures) enables one to give a numerical value to the "water-hammer" pulse so typical of this disease, and thus not only to follow the improvement which results from treatment, but also to differentiate this from other forms of valvular lesion. Fellner[4] considers that "the measure of the pulse-pressure is the most important diagnostic point for the different diseases of the circulation and the finest measure of changes in it."

Aortic insufficiency is always accompanied by high systolic pressure and relatively low diastolic pressure, the pulse-pressure (P.P.) being therefore greatly increased. In one case of which I have records the pulse-pressure was equal to nearly twice the diastolic pressure, the actual figures being:—M.S.P. = 160 mm. Hg, M.D.P. = 55 mm. Hg, P.P. = 105. After a fortnight's treatment,

during which the patient's condition greatly improved, the pulse-pressure was reduced to 55, the systolic pressure at the time being 140 mm. Hg, and the diastolic 85 mm. Hg.

In cases of aortic insufficiency in which secondary mitral symptoms are prominent the state of the blood-pressure is found to be very different. The pulse-pressure is then never very greatly increased, though the systolic pressure may still be high.

(b) *Aortic Stenosis.*—Pure aortic stenosis is rare, and I have only been able to make observations in two cases. In both the pulse-pressure was decreased, the systolic pressure being within normal limits, while the diastolic pressure was relatively high.

When aortic stenosis and incompetence co-exist, sphygmomanometric tracings are useful in determining which element predominates—a valuable point in the treatment.

Again, in combined lesions of the aortic and mitral valves the sphygmomanometer is a great help in deciding which is the chief lesion, and also in determining whether a pre-systolic mitral murmur is due to a genuine mitral stenosis or to blood returning through the aortic valve and impinging on the large anterior flap of the mitral valve (Flint's murmur).

In determining whether a diastolic murmur heard at the base of the heart is due to aortic or pulmonary incompetence, the sphygmomanometer is again of practical value. In one such case of which I have tracings all doubt was cleared up by studying the blood-pressure. In the mitral area a pre-systolic murmur was present. At the base a diastolic murmur was distinctly audible. This murmur was heard most clearly in the pulmonary area, and the question was whether it was in reality "the murmur of high pressure in the pulmonary artery" secondary to the mitral stenosis, or whether it was of aortic origin, in which case the pre-systolic mitral murmur might be a Flint's murmur. The blood-pressure tracings were very interesting. They revealed the fact that the pulse-pressure was equal to only 27 mm. Hg, the systolic pressure being 112 mm. Hg, and the diastolic 85 mm. Hg. This fact alone was sufficient to exclude aortic incompetence—a conclusion which was amply borne out by the subsequent history of the case. When the patient was discharged the pulmonary diastolic murmur was barely audible, while the pulse-pressure was maintained at a low level.

In mitral valve lesions I have not found the sphygmomanometer of such practical value, the height of the blood-pressure

seeming to me to depend on the presence or absence of such complications as dyspnœa, cyanosis, or œdema. These conditions raise both systolic and diastolic pressures on account of a stimulation of the vaso-constrictor centre in the medulla by the blood which is overloaded with CO_2. As a general rule, it may be said that whether the pressure is above or below normal before commencing treatment, it has a tendency to become restored to normal limits as the symptoms improve.

A lowering of pressure is more often than not accompanied by an improvement in the patient's condition, though subnormal pressures are generally found as a terminal phenomenon.

In the condition known as "heart block" it is found that the systolic pressure is generally enormously raised, while the diastolic pressure is raised also, but not to nearly such an extent. In two such cases, from which I have tracings, the systolic pressure was, as a rule, about 200 mm. Hg, and the diastolic about 90 mm. Hg. This great increase in pulse-pressure is said by Gibson and Ritchie[7] to be due to the long intervals elapsing between the contractions of the ventricles.

The following table shows at a glance the conclusions I have formed as to the blood-pressure changes in the most common cardiac affections. In combined valvular lesions the changes in the blood-pressure are usually those of the lesion which predominates.

Nature of Disease.	Systolic Pressure.	Diastolic Pressure.	Pulse-Pressure.
Aortic incompetence	Very high	Low	Much increased
Aortic stenosis	Low	Relatively high	Much decreased
Mitral stenosis and Incompetence: with cyanosis	High	High	Decreased
Mitral stenosis and Incompetence: without cyanosis	Variable	Variable	Variable
Myocarditis	High	High	Increased
Heart block	Very high	High	Much increased
Dilated heart	Low	Low	Decreased

Blood-Pressure in Aortic Aneurysm.—In the diagnosis of this condition it cannot be said that the sphygmomanometer gives us much more help than the older methods at our disposal, though it enables us to give an exact value to the pressures in the two arms, and to note any changes in these pressures as the case progresses. Williamson[12] has attempted to differentiate aortic

aneurysm from simple dilatation of the aorta by means of the height of the blood-pressure, but I have not found this to be possible. The height of the blood-pressure seems to me to depend in both these conditions on the presence or absence of co-existing aortic incompetence. In cases in which the aortic valve is incompetent, there are not only higher systolic pressures, but also, as one would expect, much higher pulse-pressures than in those cases in which the aortic second sound is closed.

In cases in which the diagnosis of aortic aneurysm is doubtful and no difference in the pulses is possible to detect by means of the finger, the sphygmomanometer comes to one's aid, for even the finest differences are beautifully demonstrated in the tracings.

Lastly, in the treatment of aneurysm, accurate blood-pressure estimations are of great value, for, by maintaining the pressure within normal limits, it will be found that the progress of the patient towards recovery is greatly accelerated.

Blood-Pressure in Febrile Diseases.—The literature on the question of the effect of heightened temperature on the blood-pressure is very abundant, but the findings of the different authors are only interesting as showing how conflicting results may be. Some say that the temperature and blood-pressure go hand in hand, others that they move in an inverse relationship to one another, others, again, that there is no relation either in a parallel or in a contrary direction. The reason for these different opinions is very evident. One should not expect to find any constant relationship between the height of the temperature and that of the blood-pressure, for no disease exists which is characterised by simple, uncomplicated rise of temperature. Febrile diseases are necessarily of a complicated nature, and the various factors on which blood-pressure depends are influenced in different degrees. It is, therefore, almost impossible to determine what the effect of temperature as such is on the blood-pressure. I made observations in many different forms of febrile disease, but was unable to find any constant relationship between the temperature and the blood-pressure, though, as a rule, I found the pressure low during the height of the infection. In pneumonia the pressure was lowest at the time of, or just immediately after, the crisis, and rose gradually during the next few days. In malaria the pressure was certainly lowest at the height of the fever, and rose gradually during the afebrile periods.

No results of real value are to be obtained from pursuing observations in this direction. Whether or not a rise in tem-

perature be followed by a rise in blood-pressure seems to me to have no practical bearing. What would be of value would be to determine whether the state of the blood-pressure in febrile disease is any indication of the reserve force of the heart. If this were so, it would aid one not only in the prognosis, but also in the treatment of such cases.

Devoting my attention to the study of cases of pneumonia, I set myself to find out whether the relation between the height of the blood-pressure and the rate of the pulse yields any information of prognostic or therapeutic value. Gibson[6] was the first to point out the importance of this relationship. He says that "when the arterial pressure, expressed in millimetres of mercury, does not fall below the pulse-rate, expressed in beats per minute, the fact may be taken as of excellent augury, while the converse is equally true." Following up this idea, I made observations in fifteen cases of pneumonia which came under my notice. The results were very striking. In no cases was there a fatal result when the blood-pressure, expressed in millimetres of mercury, was maintained above the pulse-rate, expressed in beats per minute, while in only one case did it happen that recovery occurred after the blood-pressure was persistently below the pulse-rate. This was the case of a woman with a history of great alcoholic excess in whom both lungs were affected. It was only by the frequent administration of strychnine, alcohol, and strophanthus that a favourable condition of affairs was obtained. On the day preceding the crisis the pulse-rate and the blood-pressure for the first time showed a favourable relation to one another. Once this was established the prognosis became good, and the patient made an uninterrupted recovery.

A chart should be made in every case of pneumonia showing the relative positions of blood-pressure and pulse-rate. By this means the first sign of a failing heart will be detected, and the necessity for stimulants and heart tonics made clear long before the pulse, or the heart sounds, indicate their need. By delaying the use of stimulants too long many cases may be lost. Stimulants and heart tonics should be given just to that degree necessary to maintain the blood-pressure higher than the pulse-rate. If this condition be maintained, or obtained if not already existing, the prognosis is always of the most favourable character, while in those cases in which, in spite of every effort, the rate of the pulse remains at a higher level than the blood-pressure, one must always take a very serious view, as recovery can seldom occur.

In addition to taking frequent readings by means of the modified Riva Rocci instrument, at least one tracing should be made daily by means of Erlanger's or Gibson's instrument. It is not necessary to disturb the patient in the slightest for this purpose, but, on the other hand, irregularities of the heart are revealed which would not be noticeable to the palpating finger or to the stethoscope.

Thus it is clear, both from a prognostic and from a therapeutic standpoint, this relation of blood-pressure to pulse-rate is of the greatest importance. It may be one's good fortune sometimes to save a case in which the blood-pressure is even persistently below the pulse-rate, but these cases will be few. On the other hand, one is always able to give a most hopeful prognosis in those cases in which a favourable relationship of blood-pressure to pulse-rate obtains.

Blood-Pressure in Nephritis.—The pathological changes in nephritis are so varied, and the stages of the disease pass so insidiously into one another, that the comparison of blood-pressure observations in a series of cases is necessarily of a somewhat unsatisfactory nature. The only forms of the disease in which during life the diagnosis can be reasonably secure are the chronic interstitial and the acute, but even in this latter group the degree of inflammation varies to such an extent that the blood-pressure cannot be expected to show any constant changes. In such forms of nephritis as the acute and the chronic parenchymatous, the diagnosis itself is often so uncertain that blood-pressure observations made in different cases cannot be considered comparable one with another.

(a) *Chronic Interstitial Nephritis.*—That high blood-pressure is an almost constant feature of this disease is already a well-known fact, and its value in the diagnosis of the condition has long been recognised. The systolic pressure reaches a height rarely seen in any other condition (except, perhaps, cerebral compression), while the diastolic pressure is raised also, though not to such an extent, thus causing a high pulse-pressure. Such an increase in pulse-pressure, associated with such a high diastolic pressure, can only take place through a great increase in the work of the heart. Both sides of the heart are generally found to be hypertrophied in consequence of this, proving that the pressure is raised in the pulmonary as well as in the systemic circulation.

The urinary changes in this condition are often uncertain, and the cardiac phenomena almost impossible to determine on account

of emphysema and obesity. By the systematic use of the sphygmomanometer the physician will detect high pressure from this cause in many patients in whom he had least expected it. He is thus put on his guard at the outset of his examination, and the diagnosis of contracted kidney must be proved or disproved.

Frequent estimations should be made in this disease, and the effect of treatment thus noted. In many cases it will be found that the effect of drugs on the blood-pressure is almost *nil*. I have obtained the best results with erythrol tetranitrate, but in one case of mine in which the pressure was never lower than 230 mm. Hg, and frequently as high as 340 mm. Hg, this drug seemed to have little or no effect.

(b) *Acute Nephritis.*—The rise in pressure in acute nephritis is probably directly proportional to the intensity of the inflammatory processes. The pressure commences to rise exceedingly rapidly after the kidneys have become affected, but I have never seen a case in which the pressure rose above 200 mm. Hg.

In acute exacerbations of a chronic lesion, much higher figures are naturally reached. The improvement following treatment of cases of acute nephritis is beautifully illustrated by sphygmomanometric tracings, and the immediate effect of individual drugs, or of baths, can be noted. I have found that in cases of primary acute nephritis vapour baths are followed by a distinct fall in the blood-pressure, whereas in cases where an acute exacerbation has occurred in the course of a pre-existing nephritis the effect is very uncertain.

Blood-Pressure in Cerebral Lesions.—Acute cerebral compression, due to intra-cranial hæmorrhage, is always found to be accompanied by high blood-pressure, the height of the pressure being directly proportional to the size of the hæmorrhage (Cushing [3]).

The rise in pressure is due partly to the presence of a foreign body in the cranium, but is chiefly due to an automatic action of the medullary centres, having as its object the maintenance of their own vitality. Were the intra-cranial tension to become higher than the pressure in the general circulation, the vital centres in the medulla would be so compressed that life would be impossible. To each rise in intra-cranial pressure, therefore, the vasomotor centre responds with a further rise in the general blood-pressure until either the hæmorrhage ceases or the medullary centres become exhausted. Thus it is that in cerebral compression one finds the highest pressures ever recorded in man.

It is for these reasons that extensive blood-letting in cases of cerebral haemorrhage is often disastrous, since a fatal result is bound to follow if the general blood-pressure be lowered below that in the cranial cavity.

The blocking of a cerebral artery is accompanied by no such increase in intra-cranial tension and consequent danger to the vital centres as is the case in cerebral haemorrhage. The general blood-pressure, therefore, is not raised, but is always found to be within normal limits. Accurate blood-pressure determinations are essential to the early diagnosis and immediate treatment of every case of hemiplegia. The finding of an approximately normal pressure makes the diagnosis of arterial occlusion highly probable, and practically excludes cerebral haemorrhage.

Blood-Pressure in Some Rarer Diseases.—The diagnosis of any but well-marked cases of *morbus Addisonii* is bound to be a matter of great difficulty, and any addition to our methods should be welcome. The fact that the blood-pressure in this condition is almost invariably low (in one case of mine as low as 80 mm. Hg) is of great value in the differentiation of this disease from those others which are accompanied by a similar pigmentation of the skin.

In two cases of *acromegaly* I found the pressure below normal, in one averaging 110 mm. Hg, in the other 90 mm. Hg.

In three cases of *myxœdema* and in six cases of *exophthalmic goitre* I made frequent observations over prolonged periods of time, and I found that, irrespective altogether of the stage of the disease, provided that mental rest were obtained, the blood-pressure was always approximately normal.

A word as to the measures which I have found most efficient in lowering and raising blood-pressure. In cases of high pressure due to commencing arterial degeneration it is always well to commence by limiting the patient's diet, especially the proteid elements, and to enjoin strict moderation in tea, coffee, alcohol, and tobacco. Such persons must avoid all sudden exertions or strong emotions. An occasional blue pill at night, followed by a saline aperient in the morning, is useful when combined with the administration of 5 to 10 grs. of iodide of potassium three times a day.

Brunton [2] recommends the following powder to be taken every morning in hot water or an aperient water:—

R Potassii nitratis.
Potassii bicarbonates, āā gr. x.
Sodii nitritis ½ to 2 grs.

More powerful drugs are sodium nitrite, erythrol tetranitrate, and liquor trinitrini, while for an emergency tablets of nitroglycerine or capsules of amyl nitrite should be carried.

In nephritis, as mentioned above, hot-air baths and venesection have their uses, but a great deal can be done in this and other conditions by keeping the bowels, skin, and kidneys in good working order.

To raise the pressure in convalescence from fever or in cases of general loss of tone the diet must be highly nutritious. Digitalis is perhaps the best cardiac tonic to raise the pressure, but strophanthus, caffeine, and nux vomica are also of great value. Systematic massage has, in many cases, a most beneficial effect in restoring tone to the vascular system.

Finally, I wish to express the great debt of gratitude I owe to Dr. G. A. Gibson, who not only put his own instruments at my disposal, but who aided and encouraged me in my observations on the patients in the wards of the Royal Infirmary, Edinburgh, of which he has charge.

References.

[1] Allbutt, *Lancet*, 1903, vol. i. [2] Brunton, *Brit. Med. Journ.*, 10th July 1909. [3] Cushing, *Amer. Journ. of the Med. Sci.*, 1903, vol. cxxv. [4] Fellner, *Deut. Arch. f. klin. Med.*, 1905, Bd. lxxxiv. [5] Geisböck, *Deut. Arch. f. klin. Med.*, 1905, Bd. lxxxiii. [6] Gibson, *Edin. Med. Journ.*, January 1908. [7] Gibson and Ritchie, *Practitioner*, 1907, vol. lxxviii. [8] Gumprecht, *Zeitsch. f. klin. Med.*, 1900, Bd. xxxix. [9] Hensen, *Deut. Arch. f. klin. Med.*, Bd. lxvii. [10] Riva Rocci, *Gazz. Med. di Torino*, 1896, Nos. 50, 51. [11] Von Recklinghausen, *Arch. f. exper. Path. und Pharm.*, 1901, Bd. xlvii. [12] Williamson, *Lancet*, 1907, vol. ii.

ON CERTAIN ASPECTS OF MEDICAL INSPECTION OF SCHOOL CHILDREN.

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PROFESSIONAL politicians have made this subject their own for many months past. I do not propose to follow their arguments. My remarks are addressed, rather, to medical officers who contemplate taking a share in the new undertaking in Scotland.

The School Medical Officer and Medical Inspectors.—This, the question of *personnel* in the new service, has been much discussed. It is now generally recognised that medical inspection of schools can be most usefully administered from the Medical Officer of Health's Office, that he should be the School Medical Officer. True, this is an addition, and a large addition, to the work of that already over-burdened official. Still, that is no argument for a dual authority, and the difficulty can be easily overcome by a delegation of duties, though not of responsibilities, to subordinates.

The objections to dual authority are many and weighty. Under such an arrangement we would have an officer visiting a school, inspecting the children and its sanitary condition, and reporting to the Education Authority. The Medical Officer of Health, or his sanitary inspector, also visits it in the course of his routine inspections, and with him lies the power of school closure in the event of epidemic disease. Further, as it is laid down that the Medical Officer of Health is to inform himself on all matters bearing on the health of the people in his area, to send an official and another authority into the schools is to deprive him of one of his best sources of information.

Judged, too, from the point of view of municipal finance, duplication of organisations cannot be considered economical.

In counties a single authority is almost essential. In the past the post of County Medical Officer of Health has been somewhat of a sinecure. He has had little executive power: on the other hand, he has had a certain *locus standi* as consulting sanitarian to his area, and he co-ordinates and summarises the reports of the district medical officers, who, however, are independent of him. To him, then, school work has come as a great boon. The new movement has produced a number of new county medical officer-

ships, so that only a few English counties are now without such an official. Indeed, these outstanding counties will have to come into line now that the Housing and Town Planning Bill is passed.

In the future, if action is taken on the lines of the Minority Poor Law Report, the County Medical Officer's post will become one of remarkable importance. It is proposed to place in his hands the control of school inspection work, with all its possible developments in the way of treatment, "open-air" schools, homes for epileptics, imbeciles and idiots, and schools for mentally defective children; of institutions, isolation hospitals, and the successors of the Poor Law infirmaries; of sanitary work, with full executive powers. In all probability some of these much-needed reforms will materialise, so that to place school work under separate control would side-track a considerable item of this very comprehensive scheme.

The question as to whether the senior officer, the school medical officer, should have whole-time assistance or the part-time aid of general practitioners is not one to which a definite answer can be given. Possibly in some areas one system is more suitable than the other. Still, recent experience has shown that the employment of general practitioners for so many afternoons a week at so much per head of children examined is not so desirable as it once appeared. It may be laid down that the whole time of the chief officer is given to administration. He cannot be expected to carry out any of the routine inspection work in any considerable area. This work is accordingly left to subordinates. But a very small experience of school work shows that there is much "following up" of cases to be undertaken. Thus children excluded from school for any reason —uncleanliness, ringworm, or any of the infectious diseases—should be seen again before being readmitted. This is necessary because so few of such children consult a medical man. It is here that the system of part-time work breaks down. One visit for such a purpose may take the inspector miles from his centre. Such a visit in the course of practice might mean half-a-guinea: in school work its financial value has yet to be determined. The more fully the work is organised the more numerous do such visits become. It is plain, then, that the school medical officer must have one or more whole-time assistants.

But there is yet another objection to the part-time medical inspector. He is often, in a county, distant from the central office so that his opportunities for keeping in touch with the school

medical officer, his ideas and plans, are few and far between. Again, far more part-timers are required to do the work than whole-timers, the result being to make uniformity in reporting and methods of work very difficult to attain. Nor does the part-timer acquire the facility in working which soon comes to the whole-time officer.

In some districts the greatest opponents of part-time work are the general practitioners themselves. They hold that it gives an unfair advantage, liable to abuse, to the holder of the office.

General practitioners, who are medical inspectors, have also something to say. The busiest of them find that school work at one shilling per head, the common rate of remuneration, does not pay them for the time employed. They also find that the work interferes with their practice. The school day is divided into two sessions, of which, after deductions have been made for roll-calling, religious instruction, &c., there remain only two hours in each for inspection work. Generally speaking, these are from ten to twelve in the morning and from two to four in the afternoon. As most practitioners are fully employed in the morning, the afternoon session is the popular one. Sometimes, however, it may not be convenient to him to attend at a time arranged. An emergency case may occur or some engagement may detain him. Such, however, cannot be allowed to interfere with school work. The inspection is usually arranged for a definite day and hour, at least a clear week beforehand. This is to allow of the teacher weighing and measuring the children, obtaining the parents' consent to the inspection, and inviting them to be present. This means that, however much it may inconvenience the practitioner, he must undertake to fulfil punctually any arrangements so made, and his school work on these occasions must take precedence of any other call on his time. This is a point that practitioners who contemplate taking up school work should weigh well, as the senior officer will, and quite rightly, insist on it. Further, in general practice, the idea of appeal to a higher authority on apparently trifling matters is unknown and unappreciated. In official work quite a different system obtains. Correspondence must be conducted *viâ* the central office, and all recommendations as regards, say, remedying sanitary or structural defects of a school, must come from there. The school inspector is, indeed, nothing but a reporter, and the more thoroughly he can sink his individuality and assimilate the policy of the central office the more smoothly will the scheme work. The inspector is a cog in a machine constructed by others,

and he must ever bear in mind his relations to the other cogs and his subordination to the controlling hand at the centre. This is bound to be irksome to a medical man accustomed to independence in thought and action, and it is only fair that this should be pointed out to him before he undertakes the work.

For the junior graduate who contemplates general practice, the work can offer no attractions. At present no therapeusis is practised, and severe or acute ailments are very rare, so that clinically little is seen but decayed teeth, nose and throat conditions, which one has not the facilities for adequately examining, and cases of defective vision, to which the same remark may be applied. Systemic diseases are, in the nature of the case, few and far between. For the junior man, however, who has the D.P.H.—in the case of many appointments that is regarded as a *sine qua non*—and who hopes to specialise in Public Health, school inspection forms an excellent introduction to official work. It often affords an insight into the administration and conduct of an office. In future, too, it seems likely that an experience of school work will be essential for the intending Medical Officer of Health, as this work tends to become centred in the Medical Officer of Health's hands.

Treatment.—The logical sequel of inspection is treatment. Without it the work is an anomaly. Large enough figures are not yet available to show how far parents have taken advantage of recommendations made to them, but, broadly speaking, the number is small, and the great majority who receive treatment get it in hospital. It therefore seems to be the bounden duty of the State to do something in this matter. The rates cannot be expected to bear the whole cost. In the meantime, treatment can be strictly limited to those conditions which demand prolonged absence from school, or in which parents are too indifferent to take action. Ringworm, for example, is a disease which parents neglect often entirely, or have not the patience to attend to. Such children cannot, of course, attend school. Their absence causes loss of grant. This, with impetigo contagiosa and verminous conditions, should certainly secure treatment, and it cannot be claimed that the loss of such cases—does he lose them?—will affect the practitioner at all.

At least one Authority in England has adopted measures for relieving cases of defective vision, which might well be followed. An ophthalmic surgeon has been engaged to give a stipulated amount of time to these cases at various centres. This principle,

extended to nose and throat conditions and teeth, would account for much of what is most urgently necessary; and who will claim, except in the case of the latter, that the practice of the practitioner will be seriously denuded?

Teachers and Parents.—English experience has shown the value of the teachers' co-operation, and this should be studiously cultivated. Broadly speaking, teachers welcome inspection for the children's sakes. At the same time the work entails for them a considerable amount of clerical work, for which they receive no material recompense. It usually falls to them to write to the parents for their consent to the inspection and to obtain the child's zymotic history. They also take each child's height and weight measurement, and enter certain facts as to the child's cleanliness and clothing on each card. Very often they are very willing to assist in preparing the duplicate copy of the report which the inspector takes away with him for filing purposes. In this way they can be extremely useful, and their goodwill is a great gain. Some of them, greatly interested in their children, follow up the cases to their homes and exert their influence in securing attention to any directions given. This goes far to make inspection efficient and capable of showing results. As the work is new to them, and many of them have not had an opportunity of learning their duties, too much cannot be expected of them at the first visit. A little tact and encouragement will secure their aid, and, as has been shown, this is not inconsiderable. Inspection is likewise a new idea to the parents. For various reasons, many of them hesitate to allow their children to be inspected in a public place and in the presence of others. They are liable to consider that an assault is made on their children. There is something to be said for this if, for example, the inspector in routine fashion estimates with the tip of his finger the patency of the inguinal canal in each child he sees, as has been done, or strips the child naked and has it standing before him while he studies the umbilicus, moles, or birth marks. It is just as essential, then, to have the goodwill of the parents as of the teachers. At the first visit many of them will be found to regard the matter with suspicion, which incaution will speedily render into open hostility. At first great circumspection is necessary. The inspection may be wisely limited to the mouth and naso-pharynx, eyes, and chest, except in special cases, and these should be seen privately, and, as far as possible, in the presence of the parent. In this way the confidence of the parents will be gained, and their support against unreasonable critics secured. Some notable instances of this could be quoted.

I have not entered into details of organisation. These are of interest only to those immediately concerned in the administration of the scheme, usually men of ripe experience, and it would be presumption on my part to address myself to them. To the would-be inspector, however, these remarks may be useful.

One question continually asked is, "Is the game worth the candle?" Emphatically yes. Very important information about the physique and nutrition of the children is being collected. The condition of filth in which many of them live has been revealed for the first time, so much so that many Medical Officers of Health have found inspection of children invaluable for indicating premises which need cleansing. Unknown lesions, for instance heart lesions, have been found. Early cases of phthisis and tubercular lesions have been unearthed, turned out of school, and put in the most favourable conditions possible. Parents have been led to give attention to the mouths, ears, and eyes of their children. Most remarkable of all has been the moral effect, frequently made the subject of comment by teachers. A new idea of cleanliness and pride in physique have been engendered in parents and children alike, the influence of which can be nothing but salutary. Even at this early stage, it can be safely predicted that the Act will secure all that its most ardent supporters hoped for.

SOME NOTES ON "CURDLED" MILK.[1]

By W. BROWN, M.B., Ch.B.

THE use of milk soured or curdled by the action of lactic acid bacilli has attracted attention for the past three or four years, and, like many new therapeutic measures, has suffered from its advocates claiming for it powers which it perhaps does not possess. As with some patent medicines, it is said to cure every disease under the sun, and is what may be called "the fashion of the moment."

The failure to produce intestinal antisepsis by means of drugs pure and simple resulted in attention being given to other methods, and it occurred to some observers that the intestinal bacteriology could be modified by the introduction of cultures of bacteria, This has already been successful, *e.g.* in the treatment of diarrhœa and furunculosis by yeasts. Years ago cultures of lactic acid bacilli were given to infants with the object of controlling diarrhœa with offensive stools. It is to Metchnikoff, however, that the chief credit of placing this form of bacteriotherapy on a practical footing and of making it applicable to the conditions of everyday practice is due. Metchnikoff had his attention drawn to this subject while staying in Bulgaria, when he was struck with the number of very old people, some of them centenarians, hard at work in the fields. On making inquiries he found that their diet consisted almost entirely of brown bread and curdled milk. The milk thus used did not contain lactic acid bacilli alone, but also cocci and yeasts, the presence of which was of doubtful value.

It was already established that lactic acid had the power of inhibiting the growth of certain pathogenic and putrefactive bacteria. He held that many diseases are the results of toxins produced in the intestines by these bacteria, and suggested that a pure culture of lactic bacillus would, when given to a patient, cause this state of affairs either to disappear or at least be modified.

The present strains of the bacillus have been isolated from these Eastern milk ferments and are sold chiefly in the form of compressed tablets. Practically every intestine is inhabited by putrefactive and fermentative bacteria, which find a suitable

[1] Read before the Aberdeen Medico-Chirurgical Society, 4th November 1909.

medium for growth in the alkaline contents. How far these bacteria help in the process of digestion is very doubtful, as growth and nutrition of the body have been proved to be possible without their presence. The cæcum and colon especially are the parts where they flourish, the contents becoming more alkaline in the lower bowel. But under some conditions an acid decomposition may take place, as in the green diarrhœa of infants. It has been estimated that, under ordinary circumstances, a quantity of bacteria weighing 8 grms is passed daily, and that in some dyspeptic conditions this quantity may rise to 20 grms. In the small intestine, the reaction being slightly acid, carbohydrates are decomposed by the bacterial action, while the proteids undergo a splitting-up in the alkaline contents of the large intestine. During the decomposition of these substances, more especially of the proteids, toxins are produced and are absorbed into the general circulation, and, according to some authorities, give rise to the majority of diseases to which flesh is heir. In addition to their direct action in causing disease, the general vitality and powers of resistance are lowered by their presence in the body.

Another danger of these bacteria is that under certain conditions they may assume a pathogenic function and give rise to suppurative and epidemic diseases.

By making the contents of the intestine acid, or less alkaline, the growth of these organisms may be stopped altogether or at least partly checked. This may be done by giving acids alone, although their effect is uncertain. A better plan is to cause acid to be produced *in situ*, and this is most easily done by the treatment now under consideration. As the lactic acid bacilli can continue to grow until the acidity of the medium becomes as high as 2 per cent., they have an excellent chance of surviving most of the other organisms in their neighbourhood. But observers have differed in regard to the possibility of the fæces being made acid by the sour milk treatment.

When fresh milk is allowed to stand for some time it becomes sour, owing to the lactose being converted into lactic acid by the action of the lactic acid bacilli which reach it from without. This lactic acid coagulates the casein of the milk, and the higher the temperature the quicker does this process of souring and coagulation take place. Hence the need for storing milk in a cool place. But in addition to the lactic acid bacilli other organisms, chiefly yeasts and cocci, are found in large numbers. These organisms are of no value, and by using up the media interfere with the growth of the more useful ones.

The presence of a culture of lactic acid bacilli in milk, which is otherwise sterile, results in (1) the growth of large numbers of the bacilli, which multiply still further if provided with fresh media in the shape of the contents of the stomach and intestines; (2) the production of lactic acid; and (3) an easily assimilated and very nutritious food, namely, casein lactate.

Buttermilk is what is left of fresh milk after most of the butter-fats have been extracted by churning, and is a thick, sour fluid in which the casein is finely coagulated. Its acidity is greater than that of milk allowed to sour naturally. This may be accounted for by the milk being infected in the churn, which is never sterile and always contains a growth of lactic acid bacilli along with other organisms. But the conditions, especially the acidity, being favourable to the lactic acid bacilli, these have attained a vigour of growth which is impossible for the other germs. The value of buttermilk has long been recognised in cases of dyspepsia and in diabetes, but as a food buttermilk has the disadvantage of a low caloric value, due to the fats having been extracted, and its composition varies very much. The chief obstacle to its extensive use hitherto has been the difficulty of obtaining it in sufficient quantities.

This more modern "curdled" milk, being easily obtained, may very suitably takes its place, and indeed is superior to it in every respect.

Methods of Preparation.—We may now consider the methods of giving lactic acid bacilli to patients. The first is the administration of tablets containing pure cultures, at the same time endeavouring to make the diet a suitable one for the growth of the organisms. The second is to give a large number of bacilli in a medium in which they are actively growing, and this is most easily done by giving milk containing them. Although the first method has, in some cases, proved very successful, it has the objection that a relatively small number of bacilli are introduced, and that they may, therefore, take longer to get established in the intestines. At the same time, it may be useful when the patient has a dislike to milk in any form, or when circumstances do not permit of milk being either obtained or prepared, and also when the patient is travelling. The tablets are crushed and taken with a quantity of milk sweetened with sugar, or in syrup and water, or with bread and jam, or farinaceous puddings. They may be taken conveniently after meals.

A Simple Method of Preparing "Curdled" Milk.—The number

of preparations of lactic acid bacilli on the market is legion, but I have always used "Sauerin," and, being quite satisfied with it, have not experimented with any others except on one or two occasions, when the results were not quite so good. Three tablets are usually recommended as the quantity necessary to curdle a pint of milk, and the expense of this consumption is a consideration for poorer patients. It is quite easy to carry on a successful growth for 2 or 3 months by using some tablets to start with, and, once it is established, to "inoculate" each day's supply of fresh milk with some of the old.

It may be well to give this method of preparation in detail. The first point to note is that all jars, cups, spoons, &c., used in the process must be either boiled or scalded and allowed to dry by draining, never being wiped with a towel or cloth. This minimises the chance of any saprophytic or other organisms being introduced. The quantity of milk required is brought to the boil. The directions given vary considerably on this point. Some say that it should simmer for 5, others for 15, minutes, but I have always found that merely bringing it to the boil seems to answer quite well. The milk is at once poured into a clean earthenware jam-jar—the 2-lb. size being the most convenient—and is allowed to cool down to about 95 F. This may be defined as "blood-heat" or tepid. When at this temperature some of the previous day's curdled milk is added in the proportion of at least 2 tablespoonfuls to each pint, and the mixture is thoroughly stirred. To keep the milk at a suitable temperature I use a wooden box lined with thick "carpet felt," with an additional removable lining of holland to prevent hairs getting into the milk. Into this box is put the milk jar, and alongside it an earthenware hot-water bottle filled with water at about 160 F. A rubber bottle tastes the milk and should not be used.

The box is tightly closed and left for 8 hours, by which time curdling has taken place, and the milk is removed to a cool place. This cooling down results in the curd breaking up, and it is then ready for drinking. Of course the curd may be broken up by stirring at any time, but it does not seem so palatable. By leaving it untouched for about 6 hours longer the action appears to go on and the milk is more acid. This being a matter of taste may be left to the patient.

The milk may be prepared without the box. It does quite well if placed inside the fender close to the upright of the mantelpiece where the temperature is fairly even and the heat rays do

not strike on it. Most of my patients do this or put the jar on the plate-rack of the range, well to the side, and taking care to remove it if the nearest flue be opened, as the temperature would then be too high. In hot summer days, or in a very warm room, it will curdle without being specially heated, but the process takes sometimes as long as 24 hours to complete.

The jar may also be put near hot-water pipes or the cylinder in a bathroom. I mention all those situations so that the best one may be fixed on. A box is an advantage in that it ensures the milk being constant both as regards acidity and consistency. This is highly desirable, especially in neurasthenia cases and with neurotics generally, as they insist that the milk has gone wrong and is "not fit to drink, &c., &c.," if it differs on one day compared to others.

The jars should at all times be covered with saucers or rounds of glass to exclude dust. In regard to the temperature of the milk, *i.e.* 95° F., and the temperature of the water in the bottle, 160° F., these are merely mentioned as the ideal temperatures, and were ascertained by experiments.

A considerable latitude may be allowed either up or down, but the milk never seems to be quite so satisfactory if the bacilli are added when the temperature of the milk is over 105° F., and the water in the bottle should not be over 180° F. The lower the temperature the slower the incubation proceeds. The great disadvantage of a high temperature is that the milk sets with a rather more solid curd and the fluid part—the whey—is of a yellow colour, and the whole drink has an intensely disagreeable sour smell and taste. This is a point on which patients should be warned, as it often turns them quite against the treatment.

The ordinary apparatus sold for the manufacture of curdled milk consists of a jar on a stand, with a night-light underneath to keep the contents at a constant temperature. This temperature is in most cases much too high, and the result is correspondingly unsatisfactory, not to say nauseous. When prepared from good rich milk the ideal curdled milk should have a very faintly acid, clean smell, and should taste like liquid cream cheese, if you can imagine what that would be like.

The advantage of inoculating each day's supply with tablets, as recommended by the makers, is a problematical one, and is supposed to be that a purer culture is obtained, but I doubt if that is such a very practical point when we consider that most of our food is anything but sterile. The disadvantages of this method

are as follows:—(1) Expense. (2) The process of curdling is not so quickly nor so evenly carried on. This is probably due to the fact that a comparatively small number of bacilli is introduced in the tablets, and some considerable time must elapse before they multiply and produce sufficient acid to curdle the milk. (3) The milk is not so pleasant to taste, having a peculiar sourness, while milk curdled by the other method has a fresh, clean taste. This observation is made not only from personal experience, but is the unanimous opinion of all my patients who have tried the two methods and compared them. When the milk so curdled with tablets is used to make the next day's supply this peculiarity of taste is still noticed until about the fourth day's "brew." If sugar is added (as it usually has to be in the case of tablets), the taste is still more peculiar. (Sugar is not needed when the other method is used.) (4) The greatest disadvantage of all is the uncertainty of curdling taking place. On several occasions I have failed altogether to get a curd, yet on the next day, under conditions identical as regards temperature, cleanliness, &c., and with tablets from the same bottle, the result was excellent. As the milk is more beneficial when taken regularly, the possibility of being without one or two days' supply is inconvenient.

Once the milk has cooled down it will keep almost indefinitely, provided it is kept very cold. I have taken it after a week's interval and could not notice any difference: this week-old milk can make quite a good growth. This means that several days' supply may be made at once and kept either on ice or in a very cold place such as a larder.

Methods of Administration.—Having considered the question of preparing the milk we may now pass on to discuss *how* and *when* the patient should take it. Most patients preferred it plain, without any flavouring or sweetening, its acidity being considered pleasant. Others, more especially children, must have it disguised by the addition of jam or syrup. As has already been pointed out, any form of carbohydrate flavouring is doubly useful. The curd may be left unbroken and supped out of a plate like porridge. If the fluid portion be squeezed out, the soft, curdy cheese remaining may be taken on bread and butter, and many of you are doubtless familiar with a preparation of this kind called "crowdie."

The milk makes a pleasant addition to stewed fruit, and as such may be taken with meals. It is said that the quickest results are got when a semi-vegetarian diet is adopted and all

substances which tend to proteolytic decomposition are avoided, but on this point I cannot offer any definite opinion.

One of the most difficult questions to settle is that of the times at which the milk should be taken. The best results are obtained when at least 1½ pints are drunk in the 24 hours in three or four portions, but of course much more than this may be taken with advantage. When small quantities were taken I have noticed that the results were not so good nor were the benefits so lasting. The treatment should be continued for 2 months or so with an interval of a week at the end.

One of the chief factors to be taken into consideration is the complaint for which it is being given. When the gastric digestion is at fault it should not be taken at or near a meal but preferably on an empty stomach. The first dose is therefore taken early in the morning and the others at appropriate times during the day.

The best plan is to find out the hours at which food is taken by the patient, and fit in the doses of milk to suit these. Such meals as the forenoon "snack" and afternoon tea can be profitably replaced by a dose of milk. If an early morning cup of tea is an absolute necessity, the first dose may be taken a quarter of an hour before breakfast; this does not interfere with the appetite for that meal—indeed, it rather increases it. When taken just before bedtime it promotes sleep, and the milk should always be slightly warmed if taken with that object. Warm water may be added, but it is better to put the tumbler in hot water or near a fire to take off the chill. It may be kept warm all night in a thermos flask, or in a jug under a cosy. In any case, the milk should always be stirred after warming, as the whey rises to the top and the curd tends to coalesce. The best results are obtained when one gives very explicit instructions to the patient, especially with regard to the *times* at which it should be taken. Having taken it myself for over a year now, I have tried all methods, and personally prefer it plain, unwarmed, and taken between meals. When explaining this milk cure to patients it is better to refer to the acid as the chief feature of the milk, and leave the question of germs alone. Many people associate germs with drains and decomposing cheese, and shudder at the idea of their interiors becoming bacterial arenas for the contest—"lactic acid bacilli *versus* the rest."

In a few cases I have noticed increase of flatulence and some diarrhœa for a day or two, but these symptoms soon go off. It is

as well to warn the patient of these possibilities, and say that they are only temporary.

Illustrative Cases.—We may now consider for what cases this treatment is suitable.

Gastric dyspepsia is divided into several arbitrary classes, and no matter in which of these a case may be put this prepared milk is in all probability useful owing either to its bactericidal properties or to its digestibility. Most of the cases in which I have prescribed it happen to have been characterised by atony of the stomach, accompanied by delayed emptying and fermentation. I may quote, as a typical instance, that of an old woman of 76, who has suffered for years from dyspepsia, with recurrent attacks of greater severity. Strict diets and acid mixtures seemed to relieve her, but on stopping these she got worse again. When called to her last May she was in bed suffering from great pain and tenderness over the stomach, which was considerably dilated, and in which splashing could be elicited. She was constipated and much troubled with flatulence, which gave rise to painful peristalsis. A diet of diluted fresh milk was not of much use, but after three days of curdled milk she got relief from her pain, and gradually the flatulence disappeared. She has taken the milk since, with the exception of a short interval, during which her old symptoms began to return, only to be banished once more by the agency of "soor dook," as she was pleased to call it.

Another patient, a man of about 40, who always bolted his meals in his endeavour to work 18 hours a day, suffered from delayed digestion. He also was very constipated. Since taking this milk he has had perfect health, has put on weight, and has a better colour. As no other measures were adopted, the result may be credited to the milk. Of its use in gastric ulcer I cannot speak from experience.

People who cannot digest fresh milk, or in whom it produces a feeling of heaviness and discomfort, can take large quantities of curdled milk without any inconvenience.

I have found it of special value in some cases of phthisis and rest cures where the patient had taken an absolute "scunner" at fresh milk. It is worthy of trial in every case of gastric dyspepsia, as it is unlikely at least to cause any aggravation of symptoms, especially if, to begin with, it is given in small quantities and diluted.

But its greatest field of usefulness is in that large and varied class of cases which are dependent on auto-intoxication from the

bowel. Many observers consider that such different diseases as arterial sclerosis, various forms of anæmia, rheumatoid arthritis, skin complaints, such as eczema and urticaria, and also neurasthenia and insanity, are due to this absorption of toxins. One often meets with cases where an ill-defined "malaise" is the only symptom. As these usually improve on the bowel being thoroughly emptied, it may be assumed that they also are toxæmias. The ordinary migraine is more than likely of the same class, and I hope to have an opportunity of trying this milk cure in some suitable case.

You must all be familiar with those cases, chiefly among women, in which the patients complain of abdominal pain, are constipated, have a bad colour, and are sometimes anæmic, have usually decaying teeth, cannot sleep, the temper not too good, and they suffer from indigestion and flatulence. I can call to mind some of these patients who have been enabled to understand that life has, after all, a few pleasures, their enlightenment being due to curdled milk, together with the judicious use of laxatives and the removal of the offending teeth.

The case of a little girl, which I shall now describe, may be of interest. Her mother keeps a log of the family ailments, always travels with thermometers and medicines, and her observations are very accurate. The girl, who is about 6½, suffers from chronic constipation. Every 4 weeks, almost to a day, she was laid up with a feverish attack, during which her temperature rose to 103° or 104° F., her tongue was coated, and her breath foul; she refused all food, but was very thirsty, and when medicine was given the motions were very offensive, but not acid. These attacks had always yielded in 2 or 3 days to grey powder and sodium salicylate. On attending her during one of these attacks it occurred to me that it was a case of auto-intoxication following on constipation, and that periodically the accumulated toxins set up this disturbance. She was given curdled milk and bynin, and now, 4 months after this last attack, is perfectly well. She has also gained weight at a greater rate than ever before. Her younger brother, aged 3½ years, was also troubled with constipation, and had difficulty in controlling his urine, probably due to reflex irritation. After a week of curdled milk he had one or two motions daily, and the bladder trouble ceased.

In every case of intestinal dyspepsia the milk should be taken regularly for a fortnight before it is decided that no benefit is being obtained. The results in cases of constipation are too varied

for any definite opinion to be given—some patients being relieved, whilst others have greater difficulty. In the majority of cases, however, I have noticed that laxatives are not so often required, and that, when they are, a smaller dose is sufficient.

Great success has been reported of it in the treatment of infantile diarrhœa and dyspepsia, and so long ago as 1887 it was pointed out that the green diarrhœa of infants was microbic in origin, and yielded to doses of 2 per cent. lactic acid. I have had no personal experience in this class of cases.

Mucous colitis is often very difficult to cure, especially by the action of drugs, whilst the question of diet is also uncertain. This lactic acid milk has been of great service in such cases. In the case of a woman of 56, who had had mucous colitis for some weeks before seeking advice, the prominent symptoms were emaciation, great pain, and very frequent stools of blood and mucus. Malignant disease was excluded, as far as was possible by examination. Two pints of this milk—all that could be obtained at the time—along with copious drinks of water, was the diet adopted. At the end of a week the pain had completely gone, and the motions reduced to about two daily, with no blood. At the end of a fortnight mucus was also absent, and the diet was increased. For the past 4 months the patient has not taken the milk, but has remained quite well. In another case, that of a woman of 50, mucous colitis developed after an operation for renal calculus. Pain was not great, but the incessant call to stool and the passage of much mucus, along with a little blood, was not only inconvenient, but was weakening the patient. Two pints were given daily, together with a simple ordinary diet, and relief was obtained at the end of about a week. In 3 weeks the motions were normal, and the patient still takes it, as do the rest of her family, not from necessity but from choice.

In a case of malignant polypus of the rectum, with the passage of blood and mucus, the patient was taking the milk prepared in a jar with a night-light under it. The milk, which I saw and tasted, was quite nauseous, and was probably keeping the diarrhœa going. She then was given the milk prepared as I have described, and her symptoms underwent a change for the better. The diarrhœa lessened, as did the pain, but the patient having returned to her home, I have lost trace of her.

It has been recommended for rheumatoid arthritis, on the ground that this disease is an auto-intoxication. In one of my cases, that of a woman who suffered great pain from intestinal

dyspepsia and excessive peristalsis, her arthritis was considerably improved after 2 months of the milk. One sometimes meets with cases in which there is a sharply-defined area of tenderness over the gall-bladder, but without the presence of actual colic. As the patients usually suffer from constipation and fermentative dyspepsia, it is probable that the condition is due to bacteria from the bowel entering the gall-bladder and setting up irritation. The bile becomes thickened, and what amounts sometimes to obstruction takes place. If these bacteria can enter, so can the lactic acid bacillus, and it is as well to give it the opportunity. A lady who suffered from this kind of attack, and who usually showed some yellowish discoloration of the conjunctiva and pharynx, did not derive any benefit from ordinary remedies, including the usual intestinal disinfectants. As she disliked the milk, she only took 2 breakfast cupfuls in the 24 hours, and for 3 months had been free from all symptoms. I have since heard from her, and she still takes the milk as ordered, and is benefiting from it.

Another illustrative case was that of a patient who was operated on 3 years ago for acute appendicitis. Fifteen months ago she was operated on for an empyema of the gall-bladder, which was removed. She made a good enough recovery from the operation, although convalescence was slow, but all the following winter and spring she steadily lost weight. Every sort of diet was tried without success. As she was of a neurotic type she had a rest cure, but only put on 3 pounds in 6 weeks. At the beginning of August she started sour milk, and began to gain soon after. Since then she has continued to gain steadily, and is now in good health. This gain in weight and condition was made in spite of a great deal of worry in connection with business matters and family illness.

In a case of malignant disease of the liver, in which the stomach was affected by the obstruction to the portal circulation curdled milk was taken and tolerated better than any other article of diet tried.

It is quite extraordinary what a number of people one comes across who have decaying teeth and foul septic mouths, even amongst those who are what may be called "rather particular people." This condition disappears, as a rule, if they are undergoing a course of this milk. It is as well to advise them to wash the mouth out *before* taking the milk but not after, so that the lactic acid has every chance.[1]

[1] It has been pointed out that this should only be allowed for a short time, as the acid would ultimately erode the teeth.

In cases of diabetes, the acidity of this milk helps to relieve thirst, whilst the conversion of the milk sugar into lactic acid removes one of the great objections to the drinking of fresh milk in these cases.

Many of you will remember an interesting paper read here some time ago by Dr. Mackenzie on the "Treatment of Incipient Insanity." He laid particular stress on the part which constipation and digestive disturbances play, either as the chief causes or predisposing ones, and advocated thorough purgation together with the use of hot baths and other means of stimulating the skin and kidneys, and so eliminating the poisons which had already been absorbed. Perhaps many of these cases of threatened insanity may be relieved by this treatment, which not only corrects the disturbances of digestion, but increases the general nutrition. It is particularly available in the cases of poorer patients, who cannot afford more expensive methods.

In conclusion, I may show you a sheet which is given to patients:—

Directions for Making Curdled Milk.—(1) Boil the quantity of milk required. (2) Pour it immediately into a clean earthenware jam jar. (3) When it has cooled down to tepid (95° F.) remove the "skin" on the top, add some curdled milk (at least two tablespoonfuls to each pint) and stir thoroughly. (4) Put the jar into a warm (*not hot*) place, *e.g.* side of fireplace or near hot-water pipes. The milk is more uniform from day to day if prepared in a box lined with felt. The box has a tight fitting lid and a washable lining, and is heated by a "1 pint" stone or tin water-bottle filled with very hot water. (5) The milk will "set" in from 8 to 12 hours and should then be put in a colder place to allow the curd to break up. (6) A small quantity is set aside to make next day's supply. (7) All jars, cups, and spoons used in the process must be scalded and dried by draining. Do not wipe them with a cloth or towel. (8) The jar should always be covered and the prepared milk stored in a cold place. (9) *When the milk is put in too warm a situation* (*e.g. in front of the fire*) *curdling takes place more rapidly. The curd is harder; the whey is yellow and has a disagreeably bitter taste. Properly prepared milk has a soft "crumbling" curd and a slightly sour taste.* (10) The milk should not be taken within 12 hours of No. 3, and should be well stirred before drinking. (11) It may be flavoured with sugar or jam and should be taken according to the special instructions given in each case.

CLINICAL RECORD.

NOTES ON A FATAL CASE OF INDUSTRIAL ANTHRAX.[1]

By CHARLES KERR, M.B., C.M.,
Assistant-Physician to Dundee Royal Infirmary.

THE occurrence to the general city practitioner of so comparatively rare an event as the appearance of a severe case of anthrax amidst the ordinary ailments in his daily round is of sufficient interest, I think, to be worthy of a permanent record. The unfortunate victim of this malady was a man, J. R., aged 56, a brushmaker to trade. He had, however, for the past four or five years worked intermittently at this trade, being chiefly employed as a watchman in the telephone office. His former employer would send for him now and then when he was unusually busy, as he was recognised as a skilful worker, having an extensive knowledge and experience as a bristle and hair sorter.

He first consulted me early in May last on account of attacks of pain in the left side, accompanied by slight shortness of breath and palpitation. These attacks came on at irregular intervals, and appeared to give rise to considerable mental anxiety, chiefly, I think, owing to too close a reading acquaintance with the *Family Physician*, the worship of this household idol having convinced him that he suffered from "angina pectoris." He had always been a very healthy man, a mild attack of smallpox being his only illness since childhood. A careful examination of his heart revealed nothing organically wrong, nor was there anything in his condition to suggest the possibility of angina. The knowledge that he had lately given himself over to occasional weeks of intemperance, which were followed by indigestion and constipation, seemed to indicate a flatulent distension of the stomach, with pressure on the heart, as the most likely cause of his complaint. I advised and suggested a more rational mode of living, and treated the constipation. He called at my house on the evening of 26th May and reported himself as feeling better, having had no recurrence of his disagreeable symptoms during the interval. On Sunday the 30th I received an urgent call to visit him, and naturally thinking I had been wrong in my diagnosis, and that he probably had an attack of real angina, I went armed with suitable remedies. Such was not so, however, for though I found him propped up in bed anxious-looking and breathless, another cause was at work. The following history was

[1] Communicated to the Forfarshire Medical Association, 4th November 1909.

obtained:—On going to bed on the night of Wednesday the 26th, after he had seen me, he noticed a small "pimple" on the right side of his neck, which increased in size on Thursday, and though not painful gave rise to considerable discomfort, owing to a feeling of heat and stiffness. On Friday he felt tired and out of sorts, the swelling had increased, but was still painless. On Saturday he could not fasten his collar, and though the "pimple" had become very large, so much so that the attention of his employer at the brush factory was directed to it, no special thought was given to the condition. A daughter had a few weeks previously been troubled with several ordinary boils, and it was thought his was a similar condition. The usual poultices were applied. During Saturday night he was very restless, the swelling had extended from the neck down and across the chest, causing great discomfort, and he had also difficulty in breathing and swallowing. He had very little sleep during the night, and next morning the symptoms were very much aggravated. When I saw him at 11 A.M. on Sunday he was obviously very ill. He was in a state of collapse; the pulse was 94, small and weak, temperature in the mouth 102° F. His hands and feet were cold, and there was a clammy sweat over the whole body. Respiration was short, hurried, and difficult, accompanied by a dry, irritating cough. He complained greatly of pain across the chest. There was very great swelling of the neck and right side of face—the neck being twice the ordinary size. About 1½ inches from the angle of the jaw, 2½ inches below the mastoid on the right side of the neck, was an almond-shaped elevation, 1 inch long, ⅝ of an inch broad, and raised ⅛ of an inch above the skin level. This consisted of a dark blue-black, dry, depressed centre, surrounding which was an elevated irregular ring of vesicles filled with bright yellow serum. Passing out in every direction was an area of variegated hue, red, purple, and green, which to touch was a firm, unyielding œdema, passing down over the clavicle to the front of the chest. The axillary glands were enlarged, but the cervical could not be felt owing to the swelling. There was no tenderness to touch at the site of the lesion, but the skin below the clavicle was very tender. The heart sounds were faint, at the bases of the lungs moist sounds were heard. The spleen was not enlarged. The general condition of the man indicated some form of virulent blood-poisoning, and the local condition suggested that of anthrax, but never having seen a case before, I naturally hesitated to make an immediate diagnosis. It was too evident that he was beyond medical aid, as the condition was without doubt an advanced general systemic infection, a septicæmia, or more correctly an anthracæmia. The obvious treatment was palliative, strychnine hypodermically, and stimulants were given, and lead and opium lotion to relieve the burning pain across the chest. In the afternoon he was a trifle easier, but vomiting had set in, which added

to his discomfort. At 9 P.M. his temperature was 103°, pulse 116, weak and irregular. The swelling in the neck had greatly increased, externally and internally; pressure on the larynx made breathing very difficult. Morphia, ¼ gr., was given, and he slept for five hours, but awoke more breathless and vomiting everything that was given to him. At 8 A.M. on Monday he was in a state of extreme collapse, his feet and hands were icy cold, and the radial pulse was almost imperceptible. The vesicles had coalesced into one complete ring. The skin over the chest was of a yellowish-green colour, and showed numerous hæmorrhagic patches. Serum was taken from the vesicles and blood from the ear for bacteriological examination. He was seen by the Medical Officer of Health and by other doctors during the day, who verified the diagnosis of anthrax. This was confirmed by the bacteriological examination, anthrax bacilli being found in abundance, both in the serum and in the blood. By 4 P.M. no radial pulse could be felt, and the heart sounds were almost inaudible. He was, however, perfectly conscious, and expressed himself as feeling weak but fairly comfortable. By evening troublesome diarrhœa had set in, and he began to suffer severely from pains in the legs and arms, crying out at times in agony. Morphia was administered at 9 P.M.; he fell asleep, was awake at 11, spoke to his friends, went off to sleep again, and died at 1.15 on Monday morning, 38 hours after he was first seen, and in the fifth day of the illness. No post-mortem was obtainable.

Two things impressed me during the illness. First, the complete absence of pain at the site of the lesion, a characteristic symptom of the disease; this probably accounted for the delay in calling for medical assistance until too late. Pain was really not a striking feature until the latter hours. Secondly, right up to the end he was perfectly conscious and fully aware of the hopelessness of his condition. Like the patient, one could only resign oneself to ultimate defeat.

I greatly regret the missed opportunity of seeing this case in its earliest stage. Had the man, when he called upon me on the 26th, drawn my attention to the swelling on his neck, it is possible I might have recognised the seriousness of the condition. The unfortunate delay in procuring medical assistance prevented the use of what is now recognised as the only satisfactory treatment for the disease; I refer to the serum introduced by Professor Sclavo of Sienna, which has been used with most beneficial results during the past few years on the Continent and in this country. The reported cases have proved that even very severe systemic infections have been carried to a successful termination by its use.

It is interesting to note that the material he was working amongst, and from which he probably contracted the disease, was horse hair from Siberia. The parcel of hair bore the Government stamp and certificate that it had been duly disinfected according to the Home

Office regulations for the disinfection of Siberian, Russian, and Chinese hair. This consists of a simple immersion in a solution of cyllin—1-100, at a temperature of 60° F. for one hour. This is supposed to be effectual, and is guaranteed not in any way to impair the strength of the material as processes of steam disinfection might, unless very carefully handled. The fact that the anthrax spores are only killed at the boiling-point of water, or by very strong antiseptics—1-100 cyllin can hardly be called very strong—makes one doubt the efficiency of the process of disinfection. At all events, in the case under consideration, there may have been faults in the method or in the application thereof, for from no other source does it seem possible that infection could have been conveyed.

MEETINGS OF SOCIETIES.

Edinburgh Medico-Chirurgical Society.

THE second ordinary meeting of the session was held on 1st December, Dr. Byrom Bramwell, President, in the chair.

Dr. Edwin Bramwell exhibited a series of intra-cranial tumours, and Dr. G. A. Gibson gave a microscopic demonstration of ganglion cells and nerve fibres in the auriculo-ventricular bundle.

The President showed a man, aged 32, with gastric and intestinal crises, in whom the operation for appendicitis had been performed.

Mr. Scot Skirving showed a patient suffering from certain defects of memory after operation for middle meningeal hæmorrhage. The patient had been unconscious for three weeks.

Dr. Boyd showed a case illustrating the great benefit that follows a salt-free diet in certain forms of œdema. The patient suffered from nephritis following syphilis.

Professor Alexis Thomson showed a boy, aged 11, in whom, on account of a periosteal sarcoma of the right humerus, the middle third of the shaft was resected and a portion of the fibula inserted in its place. The cut musculo-spiral had been inserted into the musculo-cutaneous nerve, and X-rays were being employed to try to prevent recurrence.

Dr. James Ritchie gave a demonstration of complement deviation, with special reference to the Wassermann reaction.

Dr. Dawson Turner gave a lantern demonstration and read a paper on the "Use and Effects of Radium."

Dr. Dingwall Fordyce read a paper on the "Differential Diagnosis and Treatment of a Common Form of Dyspepsia and of Early Tuberculous Infection in Children." Among other points, he thought that the capacity of digesting fats was relatively greater in tuberculosis, and that the amount of ethereal sulphates in the urine was greater in dyspepsia.

Dr. Fowler remarked that the point regarding fat digestion was a new one, but suggested that more details were necessary before assessing its value.

Dr. J. W. Simpson said there was no doubt about the difficulty of differential diagnosis between the two conditions, and he was frequently driven to make a diagnosis simply by noting the results of treatment. A special difficulty was the fact that tubercle and duodenal catarrh might co-exist.

Dr. Chalmers Watson said it was often difficult to assume that

dyspeptic cases were not tubercular. In both conditions the capacity for fat digestion was diminished.

Dr. Boyd said he had a difficulty in seeing how there should be a difference in the sulphates between cases of dyspepsia alone and dyspepsia plus tubercle.

A clinical meeting was held in the Royal Infirmary on 15th December, Dr. Byrom Bramwell in the chair.

Dr. M'Kendrick showed a case of post-partum paralysis, affecting mainly the peroneal nerve.

Dr. Dingwall Fordyce showed four infants treated with staphylococcic vaccine for multiple boils or abscesses. In all of some fifteen cases cure had resulted in three or four days. For infants under one year the dose was 100 million cocci, and in only one case had it been necessary to repeat the dose.

Dr. Edwin Bramwell showed a case of traumatic hysteria and a case of myasthenia gravis.

Dr. Russell showed a case of pulmonary osteo-arthropathy. There was no lung disease. Skiagrams indicated that there was a subperiosteal deposit of bone in the affected parts.

The President showed a case of tabes with Charcot's joint lesions, and another case of tabes with very great distortion of the spine. There was forward displacement of the lumbar spine, apparently due to a condition like Charcot's joint in the vertebræ. The President also showed a case of functional spasmodic contractures, resembling Thomsen's disease.

Dr. Norman Walker showed a large number of cases of lupus erythematosis under treatment by the application of CO_2 snow, and two cases of rodent ulcer, which had improved under the same treatment. He also showed a case of granulosis rubra nasi.

Dr. Boyd showed a case illustrating the therapeutic value of "hunger days" in the treatment of diabetes mellitus. The patient, when admitted, was suffering from severe form of diabetes mellitus with pronounced acid intoxication. Under treatment improvement took place, but the sugar excretion in the urine remained fairly constant. After a single "hunger day" sugar disappeared from the urine for twenty-four hours, returning only in small quantities.

Professor Caird showed a patient after open operation for reduction of a forward dislocation on the elbow, and a patient after operation for appendicitis, peritonitis, and obstruction. In spite of intestinal drainage, the patient did not do well until a quantity of peptonised milk was poured into the intestine. Professor Caird had never before succeeded in saving a case of such severity, and he was now inclined to think that starvation had been a factor in bringing about the unfavourable results.

Mr. Cotterill showed a case of inoperable sarcoma of the neck, a case of dislocation of the astragalus, and a case of dislocation of the upper cervical vertebra. In the latter the only symptoms had been pain and some impairment of movement.

Mr. Cotterill and Mr. Scot Skirving showed cases illustrating the use of sterilised oil in the peritoneal cavity as a preventative against the formation of adhesions.

Professor Alexis Thomson showed—(*a*) A case of osteo-myelitis fibrosa causing tumour-like bossing of the skull and multiple fractures and curvature of the femora. (*b*) A case of pistol-shot wound of the abdomen after closure of five perforations of the small intestine. (*c*) A case in which, after resection of the stomach and transverse colon for gastric carcinoma, and re-establishment of the intestinal tract by ileo-sigmoidostomy, it was found necessary at a later period, owing to painful attacks of distension of the ascending and hepatic flexure of the colon, to resect these also.

Mr. Cathcart showed—(*a*) An achondroplasic man, aged 23, after excision of carcinoma of the descending colon. (*b*) A patient after severe compound fracture of the carpus, illustrating the unaided action of the interossei and lumbricales on the fingers. (*c*) A case of tuberculous hydrops articuli of the knee—under treatment.

Mr. David Wallace showed—(*a*) A man, æt. 22, who fractured his spine in the lower dorsal region. There was *hæmorrhage into the cauda equina*, with paralysis of the lower limbs, followed by practically complete *recovery*. (*b*) A lad, æt. 18, who was admitted to hospital with symptoms of *obstruction*, visible peristalsis, and distension of the abdomen. Laparotomy disclosed adhesion of ileum to a tuberculous retroperitoneal gland. Adhesions were separated and vaseline rubbed over the parts denuded of peritoneum. Patient had no symptoms four months later. (*c*) A woman, æt. 34, admitted with large *calculous pyonephrosis*, which was opened and two stones removed from the ureter. A urinary fistula persisted. Nephrectomy was performed, and followed by complete recovery: operation was complicated by a scoliosis on the same side.

Mr. H. J. Stiles showed—(*a*) A patient, aged 68 years, four weeks after a transvesical operation for the removal of a retrovesical tumour of the prostate weighing 1 lb. 6 ozs. (*b*) A patient after enterostomy and subsequent enterectomies for carcinoma of the splenic flexure. (*c*) A patient, aged 40 years, nine weeks after excision of the knee for tuberculous disease.

Mr. Dowden showed two cases of ventral hernia cured by operation. The method employed was overlapping of the anterior sheaths of the recti.

Mr. Struthers showed a case of fracture of the glenoid fossa of the scapula.

Forfarshire Medical Association.

An ordinary meeting of the Society was held in Dundee on the evening of Thursday, 2nd December, Professor Kynoch in the chair.

Dr. Miller (the secretary) showed, in the absence of Mr. Price, a man, aged 65, who had been operated upon for an aneurysm of the femoral artery. The aneurysm, which was about the size of a duck's egg, was in the right common femoral artery, and extended about one inch above Poupart's ligament, as was seen in a photograph exhibited. Pulsation was markedly diminished in the popliteal, the anterior and posterior tibial arteries as compared with that in the left leg. There was marked thickening of the most superficial arteries, no organic lesion in the heart. The operation performed on 17th June was ligature of the right external iliac artery by intra-peritoneal route. He made a good recovery, in spite of some œdema in both feet, and occasional recurrence of pain in the right leg.

Mr. Greig showed a boy, aged 11, an imbecile, who was admitted to Baldovan Institution in 1907 with signs indicative of chronic idiopathic dilatation of the colon. The patient exhibited a marked degree of abdominal distension, especially in the upper segment. The abdomen measured 23 ins. at the umbilicus and $25\frac{1}{2}$ ins. at the most prominent part above. From the ensiform cartilage to the umbilicus the length was $6\frac{3}{4}$ ins., and $4\frac{1}{4}$ ins. from the umbilicus to the pubis. The liver was displaced upwards, the heart normal in position. The symptoms were those of chronic constipation, very obstinate to treat, did not yield to medicines, and relieved only by large enemata. Operative treatment was not indicated owing to his mental state. He next showed a girl, aged 19, who had suffered from otorrhœa since 11. In 1904 her mastoid cells were cleared out on the left side, and 3 years later a "radical mastoid operation" was performed by Dr. Guild. Shortly afterwards this was followed by left-sided facial paralysis. In December 1908 Mr. Greig did a complete peripheral anastomosis between the facial and hypoglossal nerves. The whole of the peripheral end of the affected facial nerve was sutured into the hypoglossal. For 6 months there were no signs of improvement in spite of regular treatment with galvanic current, but ultimately signs of return of muscular power manifested themselves, and steady persistence in the electric treatment had now resulted in a complete recovery of the formerly functionless nerve.

Mr. Greig also showed a man, aged 39, who for 21 years had suffered from pain in the stomach and vomiting, with great dilatation of the stomach resulting from pyloric stenosis. On 24th May last a posterior gastro-jejunostomy was performed. Great dilatation of the stomach was found, with a hard constriction at the pylorus, non-malignant. In spite of a troublesome attack of diarrhœa following the operation, he made

a good recovery, was relieved of his stomach symptoms, and gained weight rapidly. In August, however, pain in the stomach, with vomiting and signs of dilatation, returned, with subsequent loss of flesh, until on 21st October he weighed only 7 st. 6 lbs. in his clothes. On 3rd November the abdomen was again opened, when it was found that his gastro-enterostomy was working well. The pylorus was soft, normal in appearance, no stricture, no adhesions. His condition was evidently due to the inability of the stomach to perform its functions properly, having two exits to serve. It was decided to leave the artificial opening and close up the pylorus. The stomach was therefore divided near the proximal end of the pylorus and both divided ends closed by sutures. Since then the man had improved greatly, and Mr. Greig considered that his ultimate and permanent recovery seemed assured.

Dr. Mackie Whyte showed a man, aged 45, with certain symptoms indicative of syringomyelia. He was first seen in June 1908, when he complained of pain in the right shoulder, with increasing weakness in the right arm, slight spastic symptoms were present in the lower limbs, and sensations of numbness and itching in the genitals. He had also considerable mental depression, probably the result of over-alcoholic indulgence. He improved slightly under treatment. Three or 4 months ago he twisted his right shoulder while at work. An X-ray examination revealed the presence of a separation of the great tuberosity of the humerus. This was followed by increasing weakness in the arm with muscular wasting, which was now well seen in an atrophy of the deltoid, biceps, supinator longus, and scapular muscles, with greatly exaggerated reflexes and fibrillary twitchings. He exhibited also well-marked signs of spastic paralysis in the legs, with bladder irritability and frequency of micturition. The symptoms might be those of amyotrophic lateral sclerosis, but a further examination indicated a slight degree of dissociated anæsthesia, with hyperæsthesia to electric stimulation. The fracture of the humerus from so slight an accident as a twist indicated a trophic bone lesion, and those conditions, together with the bladder symptoms, almost justified one in considering the case to be one of syringomyelia, though it might be better at present to put the case into the group of unclassified spinal degenerations.

Dr. R. C. Buist exhibited a series of gynæcological specimens :—

1st. Uterus showing localised hypertrophy of endometrium, removed for hæmorrhage.

2nd. Double pyosalpinx showing on right side adherent omentum. Appendix vermiformis removed with the tumour.

3rd. Left pyosalpinx, which developed acutely after uterine curettage for hæmorrhage.

4th. Two cases of myoma of uterus, one showing marked unilateral development ; the other, the appendix, with large concretion removed at the same time.

5th. Placenta from twin pregnancy, showing extraordinary degree of twisting of the two cords; one had become strangulated, causing inter-uterine death of the fœtus.

Professor MacEwan read a paper on the "Antiferment Treatment of Acute Abscesses." He first described the recent experiments of Müller and Jochmann of Breslau upon the proteolytic ferment action of leucocytes, and their methods for distinguishing between coccal and tubercular pus. He mentioned that an endeavour had been made to give a practical application of those observations by introducing an antiferment into areas of acute suppuration to limit and arrest the melting-down process of the tissues produced by the proteolytic ferment in the pus, proof having been given of the presence of an antiferment in the blood which was antagonistic to the ferment in the pus. He described various methods adopted to procure a satisfactory ferment from human and animal serum, which had led to the discovery that the pancreatic ferment trypsin was identical with that of leucocytic antiferment. This could be used to enrich the antiferment in the serum of animals, so as to make it equal to that of normal human serum. Such a serum is prepared by Merck of Darmstadt, and has been used by German surgeons. Professor MacEwan described the technique of the method. The treatment consisted in making an incision into the abscess, and, after emptying it of pus, flushing it with the serum, and plugging the cavity with gauze soaked in the antiferment for 24 hours, and the applying an aseptic dressing. A more satisfactory method was by aspiration of the pus, and injecting into the cavity 2 to 4 c.c. of the antiferment serum, and the application of a simple dressing. The injection to be repeated if necessary. He detailed 8 cases of acute mammary, axillary, and neck abscesses, in which this method was tried with most satisfactory results. All the cases with one exception recovered sooner than they would have done under ordinary treatment, and in only one was incision made. The unsatisfactory case was an abscess of the breast, the first case tried, in which probably an insufficient amount of the serum was used. The conclusions arrived at from the present observation were that the principle of the method was a sound one, and that it opened up a new field in the physiological treatment of inflammation.

Dr. Archibald Leitch described some of the results of his recent experimental work in mouse cancer. He pointed out the wide zoological distribution of the disease, and argued that no theory of the causation of cancer could have a *primâ facie* case unless it took into account that important fact. The usual description of a cancer from the histological appearances of a minute portion at a particular time was of little value. He held that no co-relation could be drawn between the histological appearance and the clinical course of a malignant tumour, and that the claim of some pathologists to forecast

a rapid or a slow growth on such evidence had no real basis. The change in type, as, for example, epithelioma becoming malignant adenoma in the case of a mouse tumour, could be paralleled in the case of human growths; and the production of sarcoma during the transplantation of adeno-carcinoma was illustrated from human tumours. The methods of protective inoculation against mouse cancer were gone into, and the present position stated.

Dr. Leitch reported a very interesting experiment in transplantation. A mouse with spontaneous cancer had its tumours removed about 30 hours after death. These were kept at freezing-point for 18 days, and thereafter transplantation was performed successfully, though the histological appearance of the material indicated advanced degeneration. The paper was illustrated with microscopic and macroscopic specimens dealing with the points discussed.

RECENT LITERATURE.

CRITICAL SUMMARIES AND ABSTRACTS.

MEDICINE.

By W. T. RITCHIE, M.D., F.R.C.P.

A Review of Some Recent Experimental Work on the Circulation.

The value of experimental research directed towards the elucidation of the symptomatology and treatment of the circulatory affections met with in clinical work cannot readily be overestimated, and in the following pages attention will therefore be directed to some results that have been obtained by recent investigations of this nature.

Cardiac Dropsy.—The pathology of cardiac dropsy and its relation to that of local venous obstruction have been studied recently by Bolton [1] and Thacher.[2] In certain of Bolton's experiments both the superior and inferior vena cava were constricted, and a condition very similar to the venous congestion of cardiac failure was thus produced. It was found that the abdominal viscera and chest became congested, and blood was abstracted from the limbs and head, while dropsy was produced in the congested areas. The dropsy of heart disease is therefore, says Bolton, a local phenomenon, and the alterations in the circulation of the blood in uncompensated heart disease only differ from those occurring in local venous obstruction, because in the former the splanchnic circulation is interfered with. In cardiac failure there is congestion and enlargement of the liver, and, as has been so clearly shown by Mackenzie, the enlarged organ pulsates. Bolton considers that cardiac dropsy probably starts in the peritoneum. It is rather difficult to prove this, because ascites can only be detected when a considerable amount of fluid is present. But in mitral stenosis it is by no means uncommon for the dropsy to be limited to the peritoneal cavity, or for it to begin there. It is true that when patients are not very ill, and are able to walk about, the first visible dropsy begins in the feet and extends up the legs. This is merely due to the effect of gravity relieving the portal system.

Acute pulmonary œdema has been studied experimentally by Miller and Matthews.[3] They sought to determine whether this œdema was associated with a rise of pressure in the pulmonary artery, and, further, to ascertain the value of various agents in controlling the development

or in modifying the course of the œdema. As nitric oxide, ammonia, and illuminating gas are all recognised as causing acute pulmonary œdema in man, experiments were performed with these substances. But it is the results produced in dogs by experimental mitral stenosis that are of especial interest. The first effect of narrowing the mitral orifice was found to be a fall in the carotid pressure. This occurs only after a considerable degree of constriction has been induced. After further constriction of the mitral orifice there is a rise of pressure in the pulmonary artery, with pulmonary œdema, and dilatation of the left auricle followed by dilatation of the right auricle and right ventricle. The important factor in the production of the pulmonary œdema is the passive congestion in the pulmonary artery. The systemic blood-pressure varied, being low in some instances. The therapeutic effect of various agents in the treatment of acute pulmonary œdema was fully investigated by Miller and Matthews. The effects obtained by venesection alone were most disappointing. In conjunction with digitalis, however, venesection was beneficial. In cases of œdema associated with high arterial blood-pressure, the administration of digitalis or caffeine might hasten a fatal termination. Adrenalin may likewise be dangerous, and is probably always valueless. Efforts should be directed towards lowering the arterial blood-pressure by means of vasodilators or by counter-irritation of the surface of the body. Morphia is useful; oxygen inhalations give some temporary relief; and venesection may be practised provided the patient be not already decidedly anæmic.

Artificial Plethora and the Work of the Heart.—Cardiac hypertrophy is often observed in individuals who have been addicted to the consumption of large quantities of beer—the Munich beer heart. The theory that the hypertrophy is essentially dependent on a long-continued increase in the total volume of the blood was put forward in 1893 by Bauer and Bollinger. They supposed that the plethora led to an increased diastolic filling of the heart, and consequently that the organ became dilated and hypertrophied. The direct influence of the alcohol that was consumed by the patients, and of the physical strain to which they had been subjected in the course of their work, were supposed to be of subsidiary importance in producing the cardiac enlargement. This belief has not met with general acceptance. Tripier[4] maintains that the long-continued maintenance of a high arterial blood-pressure by the alcohol cannot be entirely disregarded. He lays particular stress, however, on the fact that in persons who have indulged too freely in beer and other alcoholic beverages the lungs and kidneys have almost invariably been involved, at some time or other, by infective processes. The taking of alcohol too freely would favour the persistence of any existing inflammatory conditions, and the cardiac hypertrophy of beer drinkers may therefore usually be regarded,

according to Tripier, as secondary to chronic interstitial changes in the lungs or, less frequently, to chronic vascular and renal disease.

The effect produced upon the heart by artificial plethora maintained for a long period has been studied recently by Hess.[5] Repeated intravenous injections of normal saline solution of 5 per cent., and 10 per cent. solutions of gelatine and of blood were given. According to Tigerstedt,[6] the volume of blood expelled from the left heart may be increased after even small quantities of fluid have been introduced directly into the circulation. It might, therefore, have been expected that the experiments performed by Hess would have led to hypertrophy of the heart. It was found, however, that, whereas normal saline solution was very rapidly excreted, the repeated intravenous injection of an animal with the blood of the same species undoubtedly did lead to a long-continued increase in the total volume of the blood, and the same result might perhaps be accomplished by using solutions of gelatine. But even after the plethora had been maintained for two and a half months, the heart did not present any evidence of hypertrophy. These results are in accordance with the clinical fact that in cases of polycythæmia, where there is an increase in the total volume, and in the viscosity, of the blood, there is seldom any cardiac hypertrophy. Hess draws the conclusion that in such cases the heart is not being called upon to perform more than its normal amount of work.

Rheumatic Myocarditis.—The presence of "submiliary nodules" in the hearts of rheumatic cases was first described by Aschoff and Tawara,[7] and subsequently by Geipel,[8] and others. According to Carey Coombs[9] these nodules are formed entirely of large cells, many of which are multi-nucleated, and which seem to be fibroblastic in nature. Other cells play quite a subordinate part in the formation of the nodules. They develop more especially in the neighbourhood of arteries and arterioles, and are more common in the wall of the left ventricle than the right. The localisation of the nodules indicates that in rheumatism the heart is invaded by way of the coronary arteries, and the myocardial lesions associated with rheumatism are, in Carey Coombs's opinion, of so special a nature as to lend definite support to the conception of a specific infection.

The experimental researches of Bracht and Wächter[10] have a direct bearing on this question, for they were undertaken in order to ascertain whether characteristic lesions, similar to those found in the human heart, could be produced experimentally. The diplo-streptococci which were employed in the experiments were isolated from two cases of rheumatism, and conformed in all respects to the cocci described by Triboulet, Westphal, Poynton and Paine, Beattie, and others. It was found that the diplo-streptococci occasioned not merely the characteristic articular and valvular changes described by former writers, but pro-

duced myocardial lesions which, although not altogether identical with the submiliary nodules of the human heart, were essentially lymphocytic in nature, and differed in this respect from the abscesses produced in the myocardium by infection with the ordinary pyogenic streptococci. The experiments tend to disprove the idea that rheumatism is merely an attenuated form of pyæmia, and lend support to the belief that the disease is really a specific infection.

Aortic Incompetence of Muscular Origin.—Relative aortic insufficiency, in the absence of any defect of the aortic cusps and of any aneurysm of the sinuses of Valsalva, is admittedly a rare condition. In the new edition of his *System of Medicine* this question is discussed in detail by Sir Clifford Allbutt, who concludes that regurgitation, permanent or transient, may arise directly out of a mere dilatation of the aorta and its orifice. But it is now recognised that aortic insufficiency, in the entire absence of any valvular disease, may also be due to weakness or disease of that portion of the ventricular musculature which encircles the aortic orifice and the subaortic lumen of the ventricle. It may be assumed that this subaortic musculature normally constricts the subaortic lumen of the ventricle, and thus aids the semilunar valves in closing the aortic orifice.

Hugh A. Stewart [11] points out that this assumption is justifiable, for if the heart of an animal be exposed, and a fine curved knife be passed through the wall of the ventricle so as to divide the muscle in question without injuring in any way the aortic cusps, a diastolic murmur of aortic insufficiency will at once become audible. According to Sir Clifford Allbutt, Keith finds that in advanced arterio-sclerosis the subaortic musculature is extremely prone to atrophy, much more so than the rest of the heart. The occurrence of aortic insufficiency from disease or functional weakness of the subaortic musculature is discussed by Anders,[12] who collects eight cases from the literature, and adds three further cases which he himself has observed. In such cases the diastolic murmur may disappear either when the left ventricle becomes extremely enfeebled or when the weakness of the subaortic musculature and the consequent dilatation have been overcome by appropriate treatment. The murmur associated with defect of the aortic cusps, on the other hand, is one of the most constant of murmurs, although it may likewise disappear, or be absent, as is shown in a recent paper by Bard.[13]

REFERENCES.

[1] Bolton, "An Experimental Study of the Pathology of Cardiac Dropsy, and its Relation to that of Local Venous Obstruction," *Journal of Pathology and Bacteriology*, 1909, vol. xiv. p. 49.

[2] Thacher, "Über den Einfluss cardialer Stauung auf die Blutverteilung in den Organen," *Deutsch. Arch. f. klin. Med.*, 1909, Bd. cxvii. S. 104.

[3] Miller and Matthews, "A Study of the Mechanical Factors in Experimental Acute Pulmonary Œdema." *Archives of Internal Medicine*, 1909, vol. iv. p. 356.

[4] Tripier, *Etudes Anatomo-cliniques*, Paris, 1909.

[5] Hess, "Künstliche Plethora und Herzarbeit," *Deutsch. Arch. f. klin. Med.*, 1909, Bd. xcv. S. 482.

[6] Tigerstedt, "Zur Kenntnis der von dem linken Herzen herausgetriebenen Blutmenge in ihrer Abhängigkeit von verschiedenen Variabeln," *Skandin. Arch. f. Physiol.*, 1909, Bd. xxii. S. 115.

[7] Aschoff and Tawara, *Die heutige Lehre von den pathol.-anatom. Grundlagen der Herzschwäche*, Jena, 1906.

[8] Geipel, *Münch. med. Wochenschr.*, 1907, Bd. liv. p. 1057.

[9] Carey Coombs, "Rheumatic Myocarditis," *Quart. Journ. of Med.*, 1908, vol. ii. p. 26.

[10] Bracht and Wachter, "Beitrag zur Atiologie und pathologischen Anatomie der Myocarditis Rheumatica," *Deutsch. Arch. f. klin. Med.*, 1909, Bd. xcvi. S. 493.

[11] Stewart, *Bull. of the Johns Hopkins Hosp.*, 1909, vol. xx. p. 209.

[12] Anders, "Relative Aortic Incompetency of Muscular Origin," *Ibid.*, 1909, vol. xx. p. 205.

[13] Bard, "Les insuffisances aortiques sans souffle," *Semaine méd.*, 1909, tome xxix. p. 253.

SURGERY.

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Jejunal and Gastro-Jejunal Ulcer following Gastro-Jejunostomy.

According to Paterson (*Annals of Surgery*, vol. 50, No. 2) the risk of jejunal ulcer following the operation of gastro-jejunostomy is probably under 2 per cent. In his own practice he has encountered 2 such cases, and in one of these, analyses of the stomach content were made before and after the operative treatment carried out for the relief of the jejunal ulcer. He has been able to collect records of 61 other cases, and in certain of these the after-history of the patient since the case was put on record has been obtained by him. By this means there has been produced an original memoir containing information of the utmost value, both to the operating surgeon and the physician.

Of the cases recorded, 52 can be considered as undoubted illustrations of jejunal or gastro-jejunal ulceration following gastro-jejunostomy. In 19 of these the progress of the pathological lesion resulted in perforation and the escape of bowel content into the general peritoneal cavity. In 33, limiting adhesions localised the process to the site of the disease.

Etiology. Paterson is of opinion that jejunal ulcer following gastro-jejunostomy is the result of a toxic agent, which injures or kills the cells of the mucous membrane so that they are readily digested by the gastric juices. The toxic agent usually present is free hydrochloric acid, but possibly other toxic substances may act in the same way. The circumstances under which free hydrochloric acid may be present in the jejunum are: (1) Hyperacidity of the stomach content so that the bile and pancreatic secretions, although normal in amount, are unable to neutralise completely all the acid entering the jejunum. This hyperacidity may be present in a patient upon whom the operation of gastro-jejunostomy has been performed, owing to the persistence of a condition of extreme hyperacidity which existed prior to the operation, the customary reduction which follows operation (amounting to one-third of the total acidity of the gastric content) being insufficient. If before operation the total acidity is over a hundred, the diminution following operation is sometimes insufficient to reduce the acidity of the gastric juice to normal, unless a special diet has been adopted for months. On the other hand, hyperacidity may be present owing to a recurrence of the condition as a result of a dietetic error. Too small an opening is probably the cause in certain cases.

(2) A normal percentage of hydrochloric acid may be present in the gastric juice, but associated with excessive secretion, so that the amount of hydrochloric acid discharged into the jejunum is greater than can be neutralised.

(3) Diversion of the course of the alkaline duodenal secretion, so that part of the jejunum is exposed to the action of the gastric content unmixed with bile and pancreatic juice, as, for example, where the operation of gastro-jejunostomy has been performed by the "Y" method of Roux, or has been combined with an entero-anastomosis.

(4) Normal acidity and normal amount of gastric secretion, but incomplete neutralisation in the jejunum owing to a temporary diminution in the amount of the alkaline duodenal secretion.

In a few cases the ulcers may be infective in origin. When these occur they appear soon after operation and are usually multiple.

Pathology.—Jejunal ulcers may be looked upon as the result of conditions produced by operation: gastro-jejunal ulcers at the anastomotic ring are probably the direct result of operation. The former occur most commonly where the acidity of the intestinal content is greatest; the latter at the site of the trauma, and they persist owing to a relative or a total hyperacidity. The jejunal ulcer proper has an appearance very similar to the ordinary punched-out round ulcer of the stomach or duodenum; the gastro-jejunal shows as an irregular ulceration around the site of anastomosis. The thin-walled jejunal ulcer perforates more readily into the peritoneal cavity.

In 36 cases this occurred 16 times. In 14 cases of gastro-jejunal ulceration perforation occurred in 3 cases. In cases in which the progress of the ulceration is slower, adhesions may form, shutting off the peritoneal cavity. In the majority of recorded cases these have been found uniting the jejunum to the anterior abdominal wall, and have been associated with an inflammatory swelling in the abdominal parietes, and in certain cases have led to the development of a jejunal fistula opening on the anterior abdominal wall. Such an inflammatory swelling was present in 28 out of 35 cases. The ulcer may erode into the colon; in 5 cases this occurred.

Persistence of a gastro-jejunal ulcer may result in a cicatricial narrowing of the gastro-jejunal opening so that complete closure of the opening may be produced. This state of affairs was present in 4 cases, and has been attributed to the persistent patency of the pylorus, obliteration of the artificial opening resulting from disuse. Paterson offers the more likely explanation that it is due to cicatricial stenosis caused by the absence of primary union of the gastric and intestinal mucosa, and delayed healing of the same owing to persistent hyperacidity. He supports his contention by the evidence of 19 cases in which obliteration of the gastro-jejunal opening took place: in 17 of these the method employed—for example the use of a Murphy's button—left a granulating surface at the site of union.

Clinical Features.—In more than half the cases in which the occurrence of jejunal ulceration has been recorded as following gastro-jejunostomy the operation has been of the "anterior" type. So far there is no case on record which has developed after the "no loop" operation. In the cases in which perforation took place, this occurred most commonly without there having been any prior indication of the presence of an ulcer. It is therefore difficult to determine accurately the duration of the interval between the operation and the development of the ulcer. In the recorded cases the time given has varied from 2 days to 8 years.

In 56 per cent. the symptoms of ulcer appeared within a year, the average time being 20 months. The indication of ulceration where perforation has not resulted is usually pain varying in intensity and not appearing to have any relationship to the ingestion of food. Vomiting is an inconstant symptom. An important sign is the existence of an indurated swelling in the abdominal wall. This was present in 19 of the 28 cases, and is the result of the direct extension of the ulcer: the usual situation is in the left rectus abdominalis muscle above the level of the umbilicus. In all the cases in which this localising sign was present the anterior operation had been performed. Stomach content with a faecal odour is strongly suggestive of the presence of a fistulous opening into the colon. Another most important symptom which would point to the presence

of ulceration is hyperacidity: it was present in 13 of the 18 cases in which the gastric content was analysed.

Every case in which there is recrudescent pain of a constant character after gastro-jejunostomy Paterson considers should be regarded as a potential case of jejunal or gastro-jejunal ulceration, and treated accordingly.

Treatment.—It is advisable at first to treat the patient on medical lines, by rest in bed, and a diet of milk and eggs, the administration of bismuth and hydrocyanic acid to allay the pain, and of alkalies to combat the hyperacidity.

The *indications for surgical treatment* are persistence of pain and hyperacidity in spite of medical treatment, or evidence of hypersecretion or gastric stasis. If, in the early morning, after 10 hours' abstention from food, an acid fluid can be obtained from the stomach, this is a sufficient indication of the necessity for surgical treatment. This may consist of the separation of the adhesions and closure of the perforation. The results obtained so far indicate that the less extensive the surgical treatment the better the result.

If the gastro-jejunostomy opening is small it should be enlarged.

When recurrence takes place after surgical treatment, Paterson recommends that a gastro-enterostomy "en Y" be performed, but with the implantation of the proximal limb of the jejunum into the stomach, so that the bile and pancreatic secretions are carried directly into the stomach.

Mortality.—The mortality rate of all cases of jejunal or gastro-jejunal ulceration is 42 per cent. That of the cases operated on 21 per cent., and it is of interest that the death-rate of the cases of localised ulceration is slightly higher than in the cases in which acute perforation had occurred.

OBSTETRICS AND GYNECOLOGY.

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Post-Operative Separation of Laparotomy Wounds.

Emil Ries (*Amer. Journ. of Obstet.*, October 1909) discusses this question in the light of several cases which have come under his own observation. It is an accident which occurs oftener than the number of cases recorded in the literature would lead us to suppose, and as Ries believes that its method of production is the same as that which leads

to many of the cases of post-operative hernia, its importance is very great. In 1905, Madelung published in the *Archives fur Chirurgie* an investigation on this subject based on 157 cases collected from various authors. According to Ries, however, he failed to arrive at the correct conclusion regarding the mode of production of the accident. The point which Ries sets out to prove is that in practically all cases (he is speaking of wounds completely closed at the end of the operation and free from sepsis) the deeper layers of the wound give way first, very often immediately after the operation, and usually within the first twenty-four hours, as the result of straining and vomiting. The skin edges are kept in apposition by the superficial sutures, and thus the escape of intestine is prevented. This escape only takes place immediately after the stitches are removed or a short time later, the delicate union between the skin edges being unable to withstand any strain. He records a case of his own where, on the completion of the closure of the wound, the patient vomited, and the operator heard a snap. On opening up he found that the suture securing the fascial layer had given way completely. In other cases he has seen there has been distinct evidence in the separated edges of the fascia that the opening up of these deeper layers had taken place at a much earlier date than the separation of the skin and the protrusion of intestine. It is common to find in such a wound that, while at first sight it appears that only a small part has yielded, it is seen on opening up that the whole length of fascia, muscle, and peritoneum are widely separated, the edges being covered with smooth granulations. The yielding may result from the undoing of the knot in the continuous catgut suture, from the breaking of the suture, or from it cutting through. Madelung records a case where the tissue had torn longitudinally along the line of insertion of the sutures, and another where there was complete necrosis in the tissue within the grasp of the suture.

Such accidents may occur at any time to any operator. Ries believes that the majority of scar hernias owe their origin to some such cause. There is an early complete separation of peritoneum, fascia, and muscle, and an extension of intestine between the separated edges preventing their reunion. The skin union has been sufficiently strong to withstand the strain, while the peritoneal lining of the sac is formed by granulation from the peritoneal edges. In other cases the peritoneal sutures may hold, and the sac be formed by the peritoneum protruding between the edges of fascia. In cases where there is any reason to suppose that this accident has taken place, the patient ought to be instructed to sit up while the surgeon places his hand over the wound. Any deficiency will then be detected, and secondary suture can be performed, the skin sutures being removed under anæsthesia and in thoroughly aseptic conditions.

Ries's experiences do not seem to have induced him to make any

alteration in his method of closing the wound, except that he now uses a slightly stronger catgut for the fascial layer. Those who uphold the through-and-through suture of silkworm gut will find in these cases an argument in favour of their method. For those who believe in suture in layers, an additional safeguard may be found in the insertion of a few "stay" sutures of silkworm gut, passing through skin and fascia.

Delivery by Rapid Dilatation of the Cervix.

So much is being written at present about the relative values of the different procedures for the rapid delivery of the child in cases of emergency, that a discussion of the question by such an authority as Bar (*L'Obstétrique*, September 1909) is welcome. He first of all deals with the three principal methods of rapid dilatation, viz. by Champetier de Ribes's bag, by the hand, and by Bossi's dilator, and then discusses the merits of these as compared with vaginal Cæsarean section, ordinary Cæsarean section, and subperitoneal or supra-pubic Cæsarean section. In his experience all three methods of dilatation are attended with laceration of the cervix, but de Ribes's bag gives, in this respect, better results than those obtained either by digital dilatation or that effected by Bossi's instrument. By none of the methods can sufficient dilatation be produced to enable the head of an average-sized full-time child to pass through the cervix without effort, and thus any laceration produced by the dilatation is extended during the extraction, especially when this must be effected rapidly. In digital dilatation he employs Bonnaire's method, introducing first the index finger of one hand then that of the other into the cervical canal, then the second finger of the right hand, and so on, till full dilatation is attained. This may take as long as two hours in the case of a multipara with rigid cervix and not in labour, but in a favourable case may only occupy from twenty minutes to half an hour. Bar states that, though taking longer and calling for more exertion, a greater dilatation can be obtained by this digital method than by Bossi's dilator. A full-size de Ribes's bag is usually expelled in from six to eight hours in primiparæ not already in labour, and in from two to four hours in multiparæ.

The slowness of dilatation and the occasional malpresentations of the child which it sometimes causes are the only drawbacks to the bag, and Bar prefers it to the other two methods. In 102 cases in which he employed it, lacerations were produced in 10 per cent., and in no case were these extensive. With digital dilatation there were lacerations in 30 per cent. of his 20 cases, and in 3 these were extensive, 2 dying of hæmorrhage. In all the 13 cases where he used Bossi's dilator, lacerations were produced, and in three instances the tears extended into the lower uterine segment.

Discussing the relative merits of dilatation by de Ribes's bag and vaginal Cæsarean section, the author gives the preference to the former in all cases not calling for immediate delivery. He points out that the full-time child cannot be delivered by vaginal Cæsarean section without the incision in the cervix tearing up through the lower uterine segment, and while in maternity hospitals it may have the preference over digital or instrumental dilatation in cases requiring immediate delivery, the latter methods will give better results in the hands of the general practitioner. In cases of extreme rigidity of the cervix from cicatrisation or tumour growth, and in placenta prævia, the extension of the tear in vaginal Cæsarean section is specially liable to occur, and, in Bar's opinion, the best method of delivery in such cases is ordinary Cæsarean section, the Porro operation and subperitoneal section being reserved for cases in which there is a fear of septic infection supervening.

Treatment of Puerperal Infections.

Pinard (*Annales de Gynecologie et d'Obstétrique*, October 1909) summarises the results obtained in 58,213 confinements which occurred during his service at the Maternité de Lariboisière from 1883 to 1885, and at the Clinique Baudelocque in Paris from 1890 to 1908. At the former institution there was a total mortality of 0·75 per cent., and a mortality from puerperal infection of 0·4 per cent. At the Baudelocque, out of 45,633 cases there was a total mortality of 0·44 per cent. and only 0·15 per cent. due to infection. Of this 0·15 per cent., 0·068 per cent. were delivered spontaneously and 0·086 had complicated labours. The total morbidity as judged by a temperature over 38° C. (100·5° F.) was 11·72 per cent. It is apparent from the tables that there has been a very considerable reduction in both morbidity and infective mortality in the later years of the series, the former being 25·76 per cent. in 1890 and only 5·64 in 1908, while the latter was 0·33 in 1890 and 0·12 in 1908.

In the light of those very favourable results it is interesting to learn the routine adopted by Pinard in his clinic. At the beginning of labour the patient has a bath, and the external genitals are cleansed with soap and water and a solution of 1 in 4000 biniodide of mercury. This is followed by a vaginal douche of the same solution, and a pad of aseptic wool is applied to the vulva. The attendant does not wear gloves, the hands being soaked in biniodide solution and as few vaginal examinations as possible are made. After the birth of the child a vaginal douche is given, and another after the expulsion of the placenta, a pad of aseptic wool being then applied. In the puerperium no vaginal douches are given, but the external genitals are bathed twice daily. If the membranes have ruptured before the patient is admitted, or if vaginal examinations have been made outside, a prophylactic

injection of 40 c.c. of antistreptococcic serum is given on admission and an intra-uterine douche after labour.

In the treatment of septic cases Pinard has got better results since adopting the routine use of antistreptococcic serum in 1896. He gives large doses, beginning with 40 c.c. (Pasteur Institute serum), night and morning for three or four days. Some patients have had as much as 600 c.c., and he has seen no bad results. In addition to the use of serum he employs intra-uterine douches, and emphasises the necessity of beginning them early and not repeating them too often. Curettage of the uterus has not given him good results, and he only resorts to it in cases where there is obviously membrane or a piece of placenta retained. This is probable when the fœtor of the lochia continues in spite of intra-uterine douches. In order to be effective in such cases the curetting must be done at an early stage.

MEDICAL JURISPRUDENCE.

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A New Method for the Detection of Seminal Stains on Fabrics.

Dr. Baecchi, of Modena (*Deutsche med. Wochenschr.*, No. 25, 1909), recommends a simple method of detecting spermatozoa in stains on clothing. It is easy to carry out, and has the advantage that only the spermatozoa are stained, the fabric remaining colourless. A thread or two of the suspected material is placed in a concentrated watery solution of acid fuchsin for 15 to 30 seconds, decolourised in HCl acid alcohol (10 to 30 seconds), then the material is placed in absolute alcohol for 15 to 20 seconds and afterwards teased out in zylol. The head of the spermatozoon is found to be deeply stained and the tail less intensely.

Poisoning by Unripe Hellebore Seeds

The plant in question was white hellebore (*Veratrum album* or *Helleborus viridis*), a more poisonous plant than black hellebore, and which is common in Middle and South Europe, and an active poison. The case reported by Dr. Ludwig (*Munch. med. Wochenschr.*, No. 40, 1909) is interesting from the fact that it occurred in one of his own children, and resulted from the mere handling of the unripe seeds of the plant. The child broke off a branch and played with the seeds which it had picked out of the pods. The symptoms commenced soon thereafter, with a feeling of burning in the fingers and the development of blisters filled with yellow serum similar to

those resulting from burning. A few days later the child was sick and feverish, and similar blisters developed on the tongue and gums, no doubt the result of its having unconsciously put its fingers in its mouth. This probably accounted for the general constitutional symptoms. Recovery took place at the end of 8 days.

Fatal Poisoning by Turpentine.

A child of 3 years drank about two tablespoonfuls of turpentine. There was immediate spasmodic coughing, and in a few minutes unconsciousness, which passed into deep coma. The pupils were widely dilated, and reacted slowly. Respiration was slow and intermittent. The heart-sounds could scarcely be detected, and the pulse could not be felt. A quantity of frothy liquid escaped from the mouth and nose, and notwithstanding all treatment death occurred an hour and three-quarters later.

Macroscopically the organs presented normal appearances. Microscopically, with the exception of hyperæmia of the kidneys, there was nothing special to be seen, and there was no sign of any corrosion of the alimentary tract. The observations of the author agree with those of others in describing the chief effects in turpentine poisoning as loss of consciousness and respiratory paralysis (*Medizinische Klinik*, No. 26, 1909).

The Behaviour of Veronal in the Human Body.

Fischer and Hoppe (*Munch. med. Wochenschr.*, No. 28, 1909) have investigated the subject of veronal poisoning, which is now comparatively common, with a view to trying to determine the cause of its ill-effects, the manner in which it is excreted from the organism, and the time which elapses between its administration and appearance in the urine.

The authors found that in relatively small doses, even after long repeated administrations, symptoms of poisoning are not likely to occur so long as the kidneys are healthy. The case is different with large doses, or defective function of the kidneys. In such circumstances the comparatively harmless drug must be administered with great circumspection.

Dr. Habit (*Der Amtsarzt*, No. 4, 1909) records a case of veronal poisoning in an epileptic, 18 years of age, who took in the course of two hours 60 grs. The symptoms produced were—Cheyne-Stokes's respiration, collapse, circumscribed flushing of the face, mucous membranes hyperæmic and dry, tetanic reflex excitability, with a peculiar deep stupor, accompanied by movements of the hands similar to those seen in atropin poisoning. About 36 hours later there were convulsive seizures, which were regarded as epileptic, and this was substantiated by the history obtained subsequently. On the third day the patient had recovered.

Post-Mortem Penetration of the Body by Carbon Monoxide Gas.

Some time ago Strassmann and Schulz investigated this subject, which may be one of great importance in the determination of the cause of death in certain cases. Stoll has continued the investigation whether when dead bodies are exposed for a considerable time to a CO atmosphere the blood becomes so saturated with the gas as to render the fact of the *intra vitam* inhalation of the gas impossible of definite determination. Stoll, experimenting on the bodies of children, shows that any such difficulty in diagnosis does not exist. He tested the blood of the internal organs of bodies after prolonged exposure to the gas with the spectroscope as well as by the tannin, acetic acid and quinine tests, and thus was able to conclude that the presence of CO in the blood of the internal organs indicates with certainty inhalation during life (*Vierteljahrsch. f. Gericht. Med.*, Bd. xxxviii. H. 1).

The Value of the Stomach Bowel Test as a Sign of Respiration.

Hobohm gives a critical review of the literature relating to the Breslau test, and arrives at the following conclusions:—Distension of the stomach and first part of the small intestine may always be regarded as evidence of life whether the body be fresh or decomposing. Cases of possible intra-uterine respiration have no medico-legal importance. In order that air may penetrate down to the intestine it is necessary that the infant should not die immediately after birth. Distension of the stomach alone, with air, is strong evidence of live birth, if intra-uterine respiration and artificial inflation can be excluded.

A few bubbles of air in the stomach, without distension and buoyancy of the organ when placed in water, should not be regarded as evidence of respiration. The gases of putrefaction do not give rise to uniform distension of the lumen. The absence of air in the stomach is of no value as negative evidence of respiration in cases in which the lung test is positive (*Vierteljahrsch. f. Gericht. Med.*, H. 2, 1909).

Cases of Carbon Monoxide Poisoning from an Unusual Source.

Dr. Tibbetts (*Public Health*, August 1909) records a very interesting outbreak of CO poisoning which occurred at Cradley Heath, a small iron manufacturing town on the South Staffordshire coalfield. From the now disused blast furnaces immense quantities of mineral refuse or "slag" had been deposited on waste land. The slag, when first deposited, is intensely hot, and the process of cooling is sometimes so prolonged that such heaps have been known to smoulder for twenty or thirty years.

Six dwellings had been built in 1897, about 80 yards from one of these heaps, and on 1st May 1909 the occupants of these dwellings numbered 21. During the morning of this date no fewer than 6 persons were found unconscious in the houses, while 7 others were more or less severely affected. No smell was detected in the houses, and the cases at first gave rise to great mystery. Gas poisoning was, however, suspected, and this was borne out by the death of two birds within five minutes, when placed at the top of the cellar steps of one of the houses, and also by the fact that a Davy lamp went out when lowered to within a foot of the floor of the cellar.

Spectroscopic examination of the blood in some of the cases proved the presence of CO haemoglobin, while there must also have been present, in the atmosphere, in addition to CO, a certain quantity of CO_2.

One of the victims died after the lapse of 6 weeks, one developed melancholia, and two others are still seriously affected.

Various theories were suggested to account for the poisoning, viz. an escape of coal gas, sewer gas, escape of gases from the neighbouring coal measures, and lastly, gases produced by the underground smouldering of refuse aided by the subsidence of land, of which cracks in the foundations of the houses afforded ample evidence.

The latter theory appeared to be conclusive to the minds of those who made an investigation into the cause.

Similar accidents have been recorded by Reid and Taylor, but it is interesting to note that in the present instance the ground was not frost-bound—a factor of importance in the other instances referred to.

DISEASES OF THE EAR.

By J. S. FRASER, M.B., F.R.C.S.,
Assistant-Surgeon for Diseases of the Ear, Nose, and Throat, Royal Infirmary, Edinburgh,
and
JOHN M. DARLING, M.B., F.R.C.S.,
Assistant-Surgeon, Eye, Ear, and Throat Infirmary, Edinburgh.

Non-Operative Treatment.[1]

The omission of otoscopic examination often leads to errors in diagnosis. This may, of course, easily happen where there are no definite ear symptoms, or when the constitutional symptoms are such as to mask any which might be associated with ear trouble. Thus, for example, labyrinthine disease, giving rise to giddiness, vomiting, faintness, &c., is not infrequently mistaken for some cerebral or even

[1] Non-operative Treatment of Diseases of the Ear (series of lectures by Professor Schwarze, of Halle a S., *Munchener medizinische Wochenschrift*, 25th March and 8th June 1909).

digestive disorder. Pyæmia from otitic thrombo-phlebitis has been mistaken for pyæmia of cryptogenic origin, for typhoid fever (especially before the introduction of Widal's test), and for acute articular rheumatism. The latter, it should be remembered, at its commencement usually singles out the smaller joints, whilst in pyæmia the larger joints are generally attacked. Pyæmia following on otitis is also sometimes confused with malaria, especially where rigors are marked. It sometimes happens that ear disease is diagnosed where none exists, in cases, for example, of neuralgia, caries of the molar teeth, ulceration in the nasopharynx, and rheumatism. Patients suffering from anæmia often complain of noises in the ears with no impairment of hearing. The importance, then, of otoscopic examination cannot be questioned.

The External Auditory Meatus.—Cases of foreign body in the meatus are particularly liable to suffer from ill-advised treatment. Foreign bodies, if left alone, seldom do any harm, and there is no urgent call for their immediate removal. The patient's statement should always be verified by means of the aural speculum. The only justifiable measure for the removal of foreign bodies from the meatus, except in specially skilled hands, is syringing with warm water. Attempts at removal with forceps, hairpins, or sharp hooks almost invariably drive the body further in, and may give rise to rupture of the tympanic membrane, injury to the tympanic cavity, facial paralysis, incurable deafness, or even meningitis and brain abscess.

Living insects, &c., sometimes find their way into the meatus, and may urgently demand treatment owing to the pain and tickling which they cause. Blowing in tobacco smoke or dropping in warm water usually suffices. Chloroform vapour, if available, is cleaner and surer.

In recent injuries of the ear, and in fracture of the base of the skull, the ear should never be syringed, and as little instrumental manipulation as possible should be carried out. An aseptic dressing should be applied to the ear, and the patient put to bed.

Acute Otitis Media.—Schwarze approves of the application of leeches in front of the tragus in the early stages. Later, if there is tenderness or œdema over the mastoid process, the application of ice is more likely to do good. Blistering behind the ear to relieve the pain is never successful. Schwarze is an advocate of paracentesis of the tympanic membrane to allow of free drainage from the tympanic cavity. He also advises inflation in acute catarrhal and suppurative cases after the painful stage is past. Bier's congestion was formerly employed by some aural surgeons. The congestion is produced by means of an elastic bandage which is fixed round the neck sufficiently tightly to hinder the venous return slightly. The method should be used in hospital, but only in cases where there is no suspicion of intra-cranial complication. Sudden exacerbations calling for immediate operation are apt to arise in the course of treatment. The

method may give rise to a false feeling of security, for it relieves pain while rapid destruction may be going on inside the ear.

Syringing of the ear should never be carried out unless there is something to be removed by the syringing. In the first place, it alters the natural appearance of the parts by loosening and macerating the epidermis, and thus renders accurate diagnosis more difficult. Further, it often does actual harm. In catarrhal conditions of the tympanic cavity which would otherwise subside, suppuration and perforation of the membrane may be determined by warm syringing, as they often are by poulticing.

Chronic Suppurative Otitis Media.—Insufflation of powders (alum, iodoform, boracic acid) in cases of purulent aural discharge tends to cause a damming back of discharge, and is therefore a source of danger. This is especially the case where the perforation is small or high up. The procedure should only be employed where there is a very large perforation, so that there is no fear of retention of discharge, and so that it is possible for the powder actually to reach the diseased surfaces. Even then the powder should be insufflated by the surgeon himself, and only in minimal quantities.

Middle Ear Catarrhs.—Massage in various forms has been used in the treatment of these conditions.

1. Stroking from the mastoid towards the angle of the jaw is of value in promoting absorption of exudate in the tympanic cavity, and in hastening the resolution of small lymph nodules about the mastoid. Tinnitus is often improved at the same time.

2. Hommel's pressure massage—that is, rapidly repeated pressure with the finger on the tragus—often produces considerable improvement. The improvement is, unfortunately, usually, only temporary. The method, however, does no harm, and is easily carried out by the patient himself.

3. Massage by the Delstanche masseur, which produces alternate compression and rarefaction of the air in the meatus, is recommended by some. Schwarze admits that tinnitus may be improved by the use of this apparatus, but has found no definite permanent increase of the hearing power. It is no better than tragus pressure, but it impresses the patient more, and helps the mental depression which is so often associated with these chronic catarrhs. It should be remembered that the instrument may cause pain and often injury to the ear—stretching of the tympanic membrane and ligaments of the ossicles, rupture of the membrane, bleeding into the tympanic cavity, and congestion of the inner ear, accompanied by giddiness, vomiting, fainting, &c. One should be very cautious in recommending this or any similar form of apparatus, especially for use in the patient's own hands.

4. Massage by means of Lucae's pressure-probe, by which pressure is applied directly to the chain of ossicles, can only be carried out by

the surgeon. It is a proceeding which is usually very painful to the patient, and it may cause ecchymosis or rupture of the membrane in unskilled hands. Lucae says it increases the hearing distance. Schwarze has not obtained good results with it, but thinks it worth a trial where the membrane is insensitive and thickened and suggestive of adhesions in the tympanum.

On the whole, mechanical methods may produce temporary improvement in early cases, but cannot possibly do so in advanced cases where the stapes is fixed by bony ankylosis in the oval window. Removal of the stapes has been practised in these cases with results which, though good at the time, proved to be only temporary.

Fibrolysin administered by injection under the skin of the back was used by Schwarze in fifteen cases of adhesive inflammation in the middle ear. Good results were obtained in only two cases.

Otosclerosis. — Recent pathological findings show that in these sclerotic conditions there are changes in the bony capsule of the labyrinth, in the modiolus, and in the ossicles. The cases are not always dry catarrhs of the mucosa. One finds in the petrous pyramid an osteitis allied to arthritis deformans, with absorption of the dense bone and its replacement by loose bony masses, leading to osteo-porosis and later osteo-sclerosis. Fixation of the stapes is an incident in the progress of the disease. The process is due to constitutional causes, is usually bilateral, and often hereditary. There are various theories as to its causation. Habermann and others think it is parasyphilitic. Some associate it with rheumatic gout, or with scrofula and anæmia. Others regard it as of neuroparalytic origin. The condition calls, then, for constitutional treatment. Phosphorus may do good in the early stages, but not in the later. Siebenmann states that he has been able, by the administration of phosphorus, to arrest the course of rapidly progressing cases and to improve the noises and deafness. Politzer believes in potassium iodide, but Schwarze, in cases of syphilitic origin, prefers inunction. Cases of not more than six weeks' standing are cured rapidly by this method, but old-standing cases are hopeless. When the labyrinth wall is seen through the membrane to be hyperæmic, Turkish baths are of benefit. Pilocarpine may be employed for the same end, but Turkish baths are less likely to do harm even though continued over a long period. Courses of treatment at Wiesbaden, Carlsbad, &c., are also to be recommended in such cases. The neurasthenia which is often associated with the ear trouble must not be neglected, but cold water cures, and especially sea-bathing, which invariably makes the symptoms worse, are to be avoided. Lukewarm salt baths and residence in a wooded mountainous region (1500-2000 feet) give the best results.

Zimmern and Gendreau [1] claim that they have obtained good

[1] *Arch. d'élec. med.*, 10th October 1909.

results in the treatment of these conditions by means of galvanic and high-frequency currents.

Aimless inflation of the middle ear, especially by Politzer's method, in incurable forms of sclerosis is very bad practice. In these cases the Eustachian tube is usually abnormally patent, and the only results of inflation are stretching of the tympanic membrane and repeated impaction of air on the labyrinth. In unilateral cases, the sound ear cannot fail to be damaged by repeated Politzerisation.

NEW BOOKS AND NEW EDITIONS.

Third Report of the Wellcome Research Laboratories at the Gordon Memorial College, Khartoum. By ANDREW BALFOUR, M.D., Director. Pp. 477. London: Baillière, Tindall & Cox. 1908. Price 21s.

Review of Recent Advances in Tropical Medicine, &c., &c.: Being a Supplement to the above. By ANDREW BALFOUR, M.D. Pp. 251. London: Baillière, Tindall & Cox. 1908. Price 10s. 6d.

THE previous reports of the Khartoum laboratories were so able and interesting that the issue of another report was eagerly awaited. An erroneous idea was abroad that the reports were issued annually, and there was some disappointment at the tardy appearance of the third volume. The director points out in the introduction that the reports are not issued at any fixed times, but only when sufficient material has been collected to render publication advisable.

We may say at the outset that those who have expected this report to be even more valuable than the previous ones, good as they were, will not be disappointed; it is almost twice the size of the last report, and contains 28 coloured plates and 333 other illustrations, maps, &c.

The scope and value of the report are enhanced by the inclusion of the results obtained in research by workers not actually members of the laboratory staff, including medical and veterinary officers and others.

In addition to the *Review of Recent Advances in Tropical Medicine* (noticed below), another new feature is the insertion of a chapter headed Sanitary Notes, in which, by a detailed description of the mode of carrying out sanitary measures in and about Khartoum, an object-lesson of how such work should be systematically and scientifically performed is afforded to medical officers of health, whether serving at home or abroad.

This, together with chapters on Hæmogregarines, Piroplasmosis, Spirochætosis of Sudanese Fowls and Trypanosomiasis in the Anglo-

Egyptian Sudan, form the chief contributions of the director, and, needless to say, they are full of interest. The value of soamin in the treatment of both trypanosomiasis and syphilis is rightly insisted upon, but the dangers attending the use of kharsin might have been more clearly defined, since, in the second bulletin of the Sleeping Sickness Bureau, it is stated that "the administration of this substance has caused symptoms of acute arsenical poisoning, and it should be given with caution, if it all."

The chapters on Kala-Azar in the Sudan and Kassala Provinces, by Cummins and Bousfield respectively, are of great value. It is only quite recently that the existence of this disease in the Sudan has been recognised, and it is sad to relate that one of the earliest victims was a member of the laboratory staff, the late Dr. Pirrie, whose illness terminated fatally in Edinburgh in November 1907.

Later in the volume (pp. 325-384) a report is furnished by Waterston of the work performed by Pirrie in investigating the physical characters of Nilotic Negroid tribes. This report, prepared from notes left by Pirrie, is a record of careful scientific research, and though Waterston has performed his duty well, it is a matter of regret that Pirrie was not spared to complete the work in which he took such deep interest—that, as we personally know, one of his greatest anxieties during his illness was whether he would be able to complete his report in time for publication.

The section by the travelling pathologist and protozoologist (Wenyon), together with his articles on reptiles and helminths, are full of practical interest to medical men, while the contributions on entomology by King, the report of the chemical section by Bean, and the chemistry of Sudan gums by Edie, will appeal to the economist, the manufacturer, and the civil administrator.

Chapters on the Healing Art as Practised by the Dervishes, Native Methods of Treatment in Kassala, and Medical Practices and Superstitions among the People of Kordofan afford reading both instructive and entertaining.

The coloured plates are excellent, the illustrations have been perfectly reproduced, and the letterpress leaves nothing to be desired. The director, contributors and the publishers are to be congratulated on the results of their work.

The *Review of Recent Advances in Tropical Medicine*, while primarily compiled for the benefit of those engaged in medical, sanitary and veterinary work in the Anglo-Egyptian Sudan, should find a far wider circle of readers, especially those, and they form a very numerous class, who, owing to the conditions under which they have to carry on their duties, are debarred from opportunities of reference to the greater part of the current literature on tropical diseases.

While in no sense a text-book, the subjects, arranged alphabetically,

are thoroughly reviewed, and though the range is slightly limited in view of the needs of workers in the Sudan, the work contains references to all sound practical papers published during the last six years on the most important tropical diseases.

Since it contains references to publications up to July 1908, it is thoroughly up to date.

The collection of such a mass of information ranging over a wide field of literature must have entailed arduous work by Balfour. For this he will, however, be in some measure compensated by the knowledge that he has produced a volume which will be of great value to workers in the field of tropical medicine and hygiene, not only in Egypt but throughout the world.

Practical Guide to the Diseases of the Throat, Nose and Ear: for Senior Students and Junior Practitioners. By WILLIAM LAMB, M.D., C.M. (Ed.). Second Edition. Pp. 314. 56 Illustrations. Baillière, Tindall & Cox. 1909. Price 7s. 6d.

THE plan of this book is as follows:—In one chapter we have an accurate description of the appearances observed in the examination of the mouth, fauces or pharynx in normal and in diseased conditions. The following chapter gives a brief account of the symptoms and treatment of the pathological conditions of these cavities. If this method of dealing with the subject appeals to the student or general practitioner he can be cordially recommended to buy the book, which is obviously the result of the author's own experience in diagnosis and treatment, and not merely a digest of larger text-books on the subject. The illustrations vary considerably in clearness—some of the photographs of the nasal cavity being by no means good. The chapters on the larynx are well written, though the author's views on the vexed question of the "recurrent" nerve are not quite usual. His remarks on the question of the prevailing neglect of middle ear suppuration are sound, and at the end of the book there is an excellent list of 66 prescriptions which ought to be useful to students and practitioners.

Manual of Diseases of the Ear, Nose, and Throat. By JOHN JOHNSON KYLE, B.S., M.D. Second Edition, revised and enlarged. Pp. 600. 169 Illustrations. London: Sidney Appleton. 1908. Price 12s. 6d.

THIS book makes an attempt to supply a real want—namely a comparatively short manual at a moderate price suitable for students or post graduates who wish to acquire a practical knowledge of the anatomy, physiology, pathology, symptoms, diagnosis and treatment

of diseases of the ear, nose, and throat. It cannot be said, however, that the attempt is very successful: the book is too long, and there is a want of proportion in the space allotted to the various sections of the subject. Many of the illustrations are not clear, and, as a whole, they are too much concerned with instruments. The directions for general medical treatment are needlessly long and minute, whilst the descriptions of surgical operations are not adequate, clear, or well illustrated. The Latin of the book is very shaky, and there are many examples of careless proof-reading. Great attention is paid to cuspidors, sprays, filtres, &c., as is usual in American books, and the number of prescriptions is astounding. The author appears to recommend the free use of cocaine and adrenalin—not merely as a temporary measure but for the cure of catarrhal conditions in the various cavities. The sections on tuning-fork tests and on the accessory sinuses are better than many of the others, but the descriptions of operations on the middle-ear cleft and of those relating to the intra-cranial complications of suppurative otitis media leave much to be desired. The book as a whole is certainly better suited for those who are interested in the medical aspect of the specialty than for the others to whom the surgical side makes the greater appeal.

Infected Ears (*Intrameatal Treatment*). By J. Faulder White, F.R.C.S.(Eng.). Second Edition. Pp. 100. London: Yellon & Mansfield. 1908. Price 5s.

This little book is a defence of an operation called by the author otectomy, but better known under the name of ossiculectomy. To begin with, it must be admitted that the author's views as to the treatment of chronic suppurative otitis media in general, and even in special, hospitals are perfectly sound. In the vast majority of cases the parents or friends of the patient have not got the time, patience, skill, or even the money to carry out efficiently the home treatment of infected ears. It is well known that chronic purulent otitis media and its results are much more frequent among the lower than among the upper classes. On the other hand the out-patient departments of hospitals are not staffed or arranged to supply the want, and it remains to be seen whether medical inspection of school children along with the much-needed establishment of school clinics will solve the difficulty. With regard to the operation so strongly recommended by the author, it may be well to recall the fact that, until a few years ago, Mr. Heath advocated in certain cases of chronic suppurative otitis media an operation which included ossiculectomy, removal of tympanic membrane and outer wall of attic and anterior wall of antrum. This operation, which was certainly more thorough and gave better access than can be obtained through the meatus, has been abandoned by

Mr. Heath for one which retains the tympanic membrane and ossicles wherever possible, but provides efficient drainage for the mastoid antrum; after the latter operation the hearing power of the patient is also much better than after ossiculectomy. Five years ago ossiculectomy was largely performed in the Vienna School of Otology: now only as a preliminary to the radical mastoid operation. Mr. Faulder White's book is written in a semi-popular style, and appears to be intended for the lay public rather than for the medical profession. It is impossible to believe in the series of "meningitis" cases cured by otectomy, especially as there is no note as to the result of lumbar puncture in these cases. The operation of otectomy is very shortly and inefficiently described, and the notes of twenty private cases in which the operation was performed are incomplete and unsatisfactory.

Manual of Diseases of the Ear. By THOMAS BARR, M.D., and J. STODDART BARR, M.B., Ch.B. Fourth Edition, entirely revised and largely re-written. Pp. 453. 218 Illustrations. Glasgow: James Maclehose & Sons. Price 14s.

DR. BARR has been aided by his son in the preparation of this, the fourth, edition of his well-known Manual. The book is well got up, and the three coloured plates of otoscopic appearances have been well chosen by the authors and beautifully executed by Mr. A. K. Maxwell. The order in which the different parts of the subject are dealt with is somewhat peculiar: thus we read about the mastoid operation on p. 122, but we do not begin diseases of the ear till p. 177, and only reach the anatomy of the middle ear on p. 229. The earlier part of the book dealing with the symptoms and causes of ear disease are rather too long, but the sections on suppurative middle ear catarrh, labyrinthitis and the intra-cranial complications are thoroughly up to date and excellently written. It is worthy of note that the authors advocate the attic syringe and the operation of ossiculectomy, but have no belief in thiosinamine. All through the book clinical cases which illustrate the subject under discussion are graphically described and add considerably to the interest of the volume. It is probably needless to say that the sections on acute and chronic non-suppurative otitis media contain nothing new except that the authors appear to be rather less despondent in regard to prognosis and treatment than the majority of their colleagues. The chapters on Diseases of the Inner Ear call for no special mention, but at the end of the book we find a list of 135 formulæ along with an excellent bibliography; both of these are sure to be of use to the reader. If somewhat too long for the student, the volume can be recommended to those who have the time and inclination to obtain a thorough knowledge of the subject.

Text-Book of Diseases of the Nose, Throat, and Ear. By FRANCIS R. PACKARD, M.D. Philadelphia: J. B. Lippincott Co. 1909.

THIS book has been written with the object of meeting the demand of the student and general practitioner for a not too highly specialised work on the subject. The author accordingly contents himself with a brief sketch of the anatomy of the nose and throat and of the ear, and with an outline of the main pathological conditions met with and the therapeutic measures to be employed. Such a task as the author has set himself is not easily carried out with consistence, and the work shows here and there considerable lack of balance. It seems to us, for example, that while a little more attention might fittingly have been devoted to the accessory sinuses, to the anatomy of the middle ear, and to mastoid operations, undue prominence has been given to such less important subjects as Asch's operation on the nasal septum. Digressions, too, such for instance as that on p. 263, where the author suddenly launches into the clinical description, half a page long, of a case which he met with of congenital fistula of the auricle, strike one as rather uncalled for in a text-book of this description. The teaching is for the most part in accordance with modern views. The statement on p. 58 that "chloride of ethyl is entirely unsuited for operations upon the nose and throat" perhaps requires a little qualification. Dr. Packard prefers to use forceps in the removal of adenoids.

The illustrations are on the whole good, but it is unfortunate in a book intended for readers who are presumably not specially versed in the subject, that such confusing inaccuracies should occur as are to be found in the lower diagrams on pp. 39 and 40.

There are many slips which will require correction in any subsequent edition. For example, on p. 43, the middle meatus of the nose is spoken of as lying between the superior and inferior turbinates. There are also various printer's errors, *e.g.* "mucous" for "mucus" (p. 86), "effected" for "affected" (p. 129), &c.

The English is not above the standard of medical text-book English, but the paper on which it is printed is good.

Diathesis and Ocular Diseases. By A. MAITLAND RAMSAY, M.D. London: Baillière, Tindall & Cox. 1909. Price 3s. 6d.

THIS little volume, consisting of 184 pages, contains the post-graduate lectures delivered at the Glasgow Ophthalmic Institution in September, 1908, and is published at the request of some of those who attended the course. The lectures were purely clinical, the aim being to give the author's personal experience, with special emphasis on the importance of the influence of diathesis on the causation and treatment of diseases of the eye. There are nine chapters in all. Chapter I. is

introductory, and contains many useful hints and suggestions. The neurotic diathesis, ocular headaches and asthenopia are dealt with in Chapter II., while the scrofulous diathesis and phlyctenular conjunctivitis are described in Chapter III. Then the arthritic diathesis, inflammations of the conjunctiva, sclerotic, uveal tract, retina and optic nerve, and toxic amblyopia and glaucoma are dealt with in the remaining chapters.

The whole work is most interesting and suggestive, and will repay perusal. Perhaps nowadays the ophthalmic surgeon does not pay sufficient attention to diathesis in his ocular therapeutics, and a work such as the present one may therefore be needed. We have enjoyed reading the book, and can heartily recommend its perusal to others.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

At the meeting of the College, held on the 11th inst., the following gentlemen were elected Fellows:—

Edmund Cecil Bevers, M.B., M.R.C.S.Eng., L.R.C.P.Lond., Oxford; Harry Haward Bywater, M.B., Ch.B., Preston; Arthur John Evans, M.R.C.S.Eng., L.R.C.P.Lond., Liverpool; William Aiken Fairclough, M.B., M.R.C.S.Eng., L.R.C.P.Lond., Dunedin, New Zealand; William Girdwood, M.B., Ch.B., D.P.H., Transkei, Cape Colony; John Parlane Granger, L.R.C.S.E., Glasgow; Rowland Hill Harris, L.R.C.S.E., Battle Creek, Michigan, U.S.A.; Robert Beatson Dennis Hird, M.D., M.R.C.S.Eng., L.R.C.P.Lond., Birmingham; James Husband, M.B., Ch.B., Captain, Indian Medical Service; Arthur William Bligh Livesay, M.B., C.M., Staff Surgeon, Royal Navy; Thomas Richard M'Kenna, L.R.C.S.E., Edinburgh; Henry John M'Lean, M.B., Ch.B., Wellington, New Zealand; Samuel Wilson M'Lellan, M.D., West Kirby, Cheshire; John Morris, M.B., Ch.B., Llanymynech, Montgomeryshire; William John Morton, M.D., L.R.C.S.E., Inverell, New South Wales; Anath Nath Palit, L.R.C.S.E., London, W.; James Raffan, M.D., Aberdeen; James Mill Renton, M.B., Ch.B., Glasgow; James Russell, M.B., Ch.B., Glasgow; Clinton Pelham Sapsford, M.B., Ch.M., Toowong, Queensland; Charles Johnston Smith, M.B., Ch.B., Edinburgh; George M'Call Smith, M.B., Ch.B., Perth; John Alfred Macdonald Smith, M.B., Ch.B., Naogoan, E. Bengal; Walter Taylor, M.B., M.R.C.S.Eng., L.R.C.P.Lond., Ontario, Canada; and Owen Herbert Williams, M.B., Ch.B., Liverpool.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES AND NEWS.

The Poor Law Commission Report.

THE Report of the Poor Law Commission and its appendices, which contain the minutes of evidence and various investigators' reports, constitute a nice little library of some forty volumes, and already the literature which the report has called forth must nearly equal it in bulk. As everyone knows by this time, there are really two reports, and those who have not read them, but only what the newspapers say about them, have probably formed the idea that the majority report is strongly individualistic, and the minority report as strongly socialistic, in character. Such an impression, however, is by no means just to either report. The majority would certainly resent the imputation that they are not ready to acknowledge the collective responsibility of society for the needs of its weaker members, and the minority do acknowledge fully and freely the value to the State of maintaining a healthy family life and the sense of individual responsibility. Those who listened to Mr. and Mrs. Sidney Webb at their recent meeting in the Synod Hall, in support of the minority report, must have been struck by the entire absence from the addresses of both speakers of any of the usual planks of the Socialist party, and Mr. Webb has indeed expressly claimed that the minority has brought forward a scheme which will solve the problem of unemployment without recourse to Socialism.

The two reports do, however, differ fundamentally from one another, but before speaking of their differences it will be well to point out that there exists a remarkable amount of agreement between them. The following points of agreement are noted by Professor J. H. Muirhead in a little book, entitled *By What Authority*, to which we have pleasure in referring as an admirable non-partisan introduction to the study of the reports themselves. "All [the Commissioners] are agreed in recommending the scrapping of the old machinery, all but two being in favour of substituting the county and the county borough for the antiquated union. All are agreed in condemning the mixed workhouse, in which it is difficult to believe 15,000 out of 50,000 'Poor Law'

children in England and Wales, 8000 out of 9000 in Ireland, are still immured. All are agreed in denouncing the system of non-preventive, inadequate, non-curative, unconditional outdoor relief and medical service which is the outcome of the present system. All condemn the present extent of boy and girl labour. All agree that casual labour is the main cause of industrial distress, and the reports point with singular unanimity to the causes to which it in turn must be attributed and to the necessity of taking active steps to decasualise it. All would give power to one authority or another to place certain classes of unemployables under restraint, and of organising some system of assisted insurance against unemployment in favour of another class." It is obvious, therefore, that even within the lines of agreement there is an enormous field for future legislation involving the break-up of the Poor Laws which, since 1834, have governed the methods of dealing with the poor. If we are really, as seems probable, on the eve of fundamental changes in our poor laws, it is not likely that these changes will follow exactly the lines laid down by either the majority or the minority, but it is to be hoped that the differences between the recommendations of the two reports will be subjected to impartial and dispassionate examination and criticism. As Sir Oliver Lodge says, the subject "too vitally concerns the welfare of the nation to be treated as a subject in which party advantage may be gleaned."

The minority report is a remarkable document which has attracted a great deal of attention, partly because it is extremely ably written and is much more interesting than the majority of novels, partly because it has been issued in a very cheap and handy form, partly owing to the ability and energy with which Mrs. Sidney Webb, one of the signatories, has been pushing the cause of the committee for the break-up of the Poor Law at public meetings throughout the country.

Professor Muirhead, in the title of the book referred to above, seems to us to have struck the fundamental difference between the signatories of the two reports. At any rate the difference in the authorities to which poor relief should be entrusted is one of the most striking points of divergence in the reports. The majority would replace the present Poor Law Guardians by a Public Assistance Committee (half of which may be members of the Borough or County Council), assisted by a Voluntary Aid Council, to each of which would be entrusted the administration of public funds. The minority, on the other hand, would not appoint any special authority. They point out that the chief causes of pauperism are sickness and disease (responsible for 40 or 50 per cent. of the total pauperism of the country), old age, mental deficiency and insanity, unemployment, and neglected infancy and childhood, and that we have already authorities specially constituted for dealing with most of these. To the proper authority (Public Health, Pensions, Lunacy, Education) they would entrust

each case according to its nature. Thus a destitute child, instead of being fed and clothed by one authority and educated by another, as at present, would be committed entirely to the education authorities, whose powers would be extended in the necessary directions. The problem of unemployment is dealt with at great length and with a psychological understanding of the conditions, social and individual, to which the bulk of unemployment is due, which awakens our respect and impresses us favourably towards their recommendations, which include the establishment of a national authority for dealing with this great problem. Both reports rely on the assistance of existing voluntary agencies. The majority would allot to these functions co-ordinate with those of the Public Assistance Committee, the minority would give them subordinate functions with no power to administer public funds.

In some respects it may be said that the one report appears to be weak where the other is strong. The weak point about the majority report is that their Public Assistance Committee is rather too like a resurrection of the existing Poor Law Guardians whom they have condemned to extinction. The weak point of the minority report is in the provision made for co-ordinating the work of the various authorities to which they would commit the relief of the poor. This the signatories evidently recognise, but their suggestion of the appointment of a Registrar of Public Assistance, who would keep a register of all cases in receipt of public assistance, and sanction grants of home aliment, and even assess and recover payment for relief granted to any who may be found to be really in a position to pay, seems scarcely likely satisfactorily to meet the needs of the case.

The proposals for medical relief we cannot discuss at present, but we would urge those who are interested in the question of poor relief, either generally or in its medical aspects, to study the reports themselves, and not to found an opinion upon them on party statements in the public press.

The School Clinic at Dunfermline.

DUNFERMLINE was early in the field in respect to the medical inspection of school children, and naturally, therefore, has to face the question of remedial measures in advance of the rest of Scotland. We understand that the trustees of the Carnegie Institute are about to start a school clinic. Two rooms have been taken for the purpose and are in course of being fitted up and furnished with suitable equipment. The primary aim of the clinic will be the treatment of cases which can be advantageously undertaken by a trained nurse, but which cannot be, or are not being, satisfactorily managed at home. Cases are not to be sent to the clinic directly by the medical inspector. Whenever the medical inspector, in the course of his routine examination of the school

children, finds a child who is in need of remedial measures, he will, as heretofore, send a note to the parent advising that a medical man should be consulted. If the family doctor thinks the case is one for treatment at the clinic, he can advise the parent accordingly. It is obvious that an experienced nurse should be able to give invaluable assistance in the treatment of such diseases as impetigo and ringworm, in the syringing of running ears, in the application of dressings, and in other ways, and all this without any interference with the interests of the local medical practitioners. The Dunfermline school clinic must be looked upon as an experiment, but it is an experiment which may have far-reaching developments, the evolution of which we shall await with interest.

The National League for Physical Education and Improvement.

We have not hitherto referred to the National League for Physical Culture and Improvement which was incorporated in 1905, but we have pleasure in doing so on the occasion of the publication of the League's fourth annual report. The chairman of the League is the Lord Bishop of Ripon, and amongst the vice-presidents we find the names of Sir J. Clifford Allbutt, Sir Lauder Brunton, Professor Clouston, Sir Henry Craik, Sir Thomas Fraser, Dr. Leslie Mackenzie, Professor Osler, Sir William Thomson, Sir John Batty Tuke, and Sir William Turner. The objects of the League are stated as follows:—(1) To stimulate public interest in the physical improvement of the people. (2) To co-ordinate and extend the work of agencies already established, and to start organisations for physical health and well-being wherever none exists. (3) To make known the legal powers already possessed by public authorities. (4) To promote fresh legislation where necessary.

It is evident that the objects of the League are such as must appeal very strongly to medical men, and much of the work which has already been accomplished is of a medical nature. We find, for example, that sub-committees have been appointed, and have been engaged in the work of (1) preparing a London Directory of Health-Promoting Agencies; (2) preparing, in card form, revised instructions on the feeding and care of infants; (3) considering unsatisfactory day nurseries. The League has published leaflets on "How to Bring up a Baby," of which 10,000 copies have been taken by District Nursing Associations; on "Health Visiting"; and on other subjects. Branches of the League have been established in various towns, and during the coming year it is intended to undertake propagandist work with the object of increasing both the membership and the number of branches. A quarterly journal, *Progress*, devotes part of its space to the interests of the League, and is circulated among subscribers. In the October number of this journal there is an article by the ex-Mayor of Huddersfield on "The Responsibility of Health Authorities with regard to

Infantile Mortality," and one by Miss Margaret M'Millan entitled "A Plea for School Clinics," which contains illustrations of the school dental clinic at Strassburg and the school clinic at Bow. We may perhaps add that the subscription of a Fellow of the League is one guinea, of a member, five shillings, and that the address of the headquarters is 11 Southampton Row, London.

State Registration of Nurses.

On another page will be found some account of the differences of opinion existing between those interested in this important question. As we go to press, we learn that the prospect of some agreement being reached is now much brighter than appeared possible a few days ago. Representatives of the various bodies concerned have met in London, and, although the conference was private, it is understood that both sides were prepared to make concessions in order to secure a single Register for the United Kingdom. This is as it should be, and provided that Scottish interests are adequately safeguarded, there should be no opposition in this country to a general Bill. It is much to be regretted that the two Scottish Societies cannot settle their differences in the same satisfactory fashion.

Forthcoming Congresses.

The seventeenth International Congress of Medicine will be held in London in the year 1913. A General Committee is being formed, with Dr. F. W. Pavy as acting President, and Mr. D'Arcy Power and Dr. Clive Riviere as acting Secretaries, to make the preliminary arrangements for the meeting.

The third Laryngo-rhinological Congress will be held in Berlin in 1911, towards the end of August or the beginning of September. Information may be had from Professor Rosenberg, 26 Schiffbauerdamm, Berlin.

Appointments.

We congratulate Dr. David Waterston, Senior Demonstrator of Anatomy in the University, on his appointment as Professor of Anatomy at King's College, London.

As a result of the formation of an additional surgical charge in the Royal Infirmary, Mr. Alexander Miles has been promoted to the rank of full Surgeon, and Mr. E. Scott Carmichael has been elected an Assistant-Surgeon.

Mr. W. J. Stuart has been appointed Surgeon to the Deaconess Hospital, Edinburgh, *vice* Mr. Alexis Thomson, resigned; and Mr. James M. Graham has been elected as Assistant-Surgeon.

Curling.

After a hiatus of three years the Physicians and Surgeons competed on 29th January for the possession of the Chiene Cup. As usual the match was played on the pond at Morningside Asylum. After a most enjoyable game on excellent ice the match ended in a victory for the Surgeons by the narrow majority of one shot.

R. C. S.	*R. C. P.*
H. S. Reid.	G. H. Melville Dunlop.
W. G. Sym.	A. D. R. Thomson.
J. V. Paterson.	G. M. Robertson.
J. A. H. Duncan.—7 up.	T. S. Clouston.
J. Macmillan.	Jas. Carmichael.
T. Sherman.	J. C. Dunlop.
Russell Wood.	Norman Walker.
W. J. Stuart.	F. W. N. Haultain—6 up.

SOME POINTS RELATING TO COMPENSATION FOR INJURIES.[1]

By ALEXANDER MILES, M.D., F.R.C.S.,
Surgeon to The Royal Infirmary.

I HAVE selected the subject of compensation for injuries, because it is one in which all of us, in whatever branch of medical practice we may happen to be engaged, must be more or less interested. Whether as the family doctor of the injured man, as a certifying surgeon under the Factories Act, as a medical referee under the Workmen's Compensation Act, or as an expert witness in disputed cases taken into Court, not only may we be called upon to form and express opinions on particular cases, but these opinions may be subjected to searching, and sometimes merciless criticism at the hands of opposing lawyers and professional brethren.

Another reason that may make it useful for us to consider this subject is that it so often leads us into a region in which, as doctors, we do not feel quite at home. There is usually in these cases a conflict between law and science, and our leanings are naturally towards the scientific rather than towards the legal aspects of the case in hand. Our professional point of view is so constantly that of the welfare of the patient that many of us find it extremely difficult to get away from the sentimental position that our first duty is to safeguard the interests of the injured man.

In relation to this class of work it is necessary for us to keep in mind that we are taking part in a judicial procedure, in which, as a matter of pure business, the relative claims of the workman and the employer are to be settled on definite lines laid down by the Legislature. The injured man must, for the time being, be looked upon merely as a wage-earning machine, and our attention is to be directed to the question how far this machine has been thrown out of order, and to what extent its wage-earning capacity has been diminished; for it has been clearly laid down by Lord Justice A. L. Smith that "compensation under the Act is given in respect of loss of wages, and not in respect of personal suffering." Compensation is a *quid pro* wages.

The Act of 1906 has not only considerably increased the scope of the principle underlying this legislation, but many of the decisions on the Acts of 1897 and 1900, with which we had

[1] Read before the Fifeshire Medical Association, May 1909.

become familiar, have been overruled or rendered nugatory, and fresh decisions now govern the working of the Act.

Many points are yet unsettled, or have only been decided upon in the lower Courts and await the decisions of the Appeal Courts before they become authoritative, but enough has been determined to form a basis for our present review of the subject.

What is the ruling provision of this Statute? Section 1 (1) says: "If in any employment personal injury by accident, arising out of, and in the course of, the employment is caused to a workman, his employer shall be liable to pay compensation. . . ."

The first question raised in connection with this clause is, *What is personal injury by accident?* and nothing has struck one more, in reading the Law Reports, than the liberal way in which the Courts have interpreted the phrase for the purposes of this Act. Personal injury is held to mean any physiological derangement, and has been extended to include nervous shock giving rise to physical consequences, apart from gross physical lesions. For example, a railway signalman noticed that an accident was imminent. He "endeavoured to avert it, and succeeded, but the excitement and alarm caused a shock to his nervous system which incapacitated him from work, and the Court held that he was incapacitated from employment by reason of accident sustained in discharge of his duty in the company's service" (*Pugh* v. *London, Brighton and South Coast Railway Company*).

In the early days of the Workmen's Compensation Act endless discussion took place in the Courts as to what constitutes an "accident." The first authoritative pronouncement on the subject was made by Lord Maclaren, in giving his judgment in a case in which a miner strained his back while attempting to replace a hutch on the rails. His Lordship said: "If a workman, in the reasonable performance of his duties, sustains a physiological injury as the result of the work he is engaged in, I consider that this is accidental injury in the sense of the statute" (*Stewart* v. *Wilsons & Clyde Coal Co., Ltd.*).

Lord Kinnear, in supporting this decision, said: "I cannot see any reason to doubt that the injury in this case may quite properly be described as the result of an accident. It was not part of the design or scheme of operation in which the man was engaged; it was not intentional; and it was unforeseen. It arose from some causes which are not definitely ascertained, except that the appellant was lifting hutches which were too heavy for him. If such an occurrence as this cannot be described in ordinary language as an accident, I do not know how otherwise to describe it."

This view was supported also by Lord Macnaghten in the House of Lords, in relation to a man who ruptured himself by over-exertion in trying to turn a wheel. "I come to the conclusion that the expression 'accident' is used in the popular and ordinary sense of the word as denoting an unlooked-for mishap or an untoward event which is not expected or designed" (*Fenton* v. *Thorley & Co., Ltd.*).

I quote these opinions to bring out what appears to be the view taken by the Courts, that so long as the injury is not self-inflicted or caused by design it falls within the meaning of the word "accident" for the purposes of this Act.

It is interesting to us as medical men to notice an opinion expressed by Lord Chancellor Halsbury which brings certain conditions, which we usually speak of as *diseases*, within the category of accidents. Two workmen were engaged in the vicinity of Persian wool and contracted anthrax—one by infection of a wound in the neck, the other in the corner of the eye. The Court held that in both these cases there had been "personal injury by accident." Lord Halsbury said: "I so far agree with my noble and learned friend" (Lord Robertson, who dissented) "that I think, in popular phraseology, from which we are to seek our guidance, it excludes, and was intended to exclude, idiopathic disease; but when some affection of our physical frame is in any way induced by an accident, we must be on our guard that we are not misled by medical phrases to alter the proper application of the phrase 'accident causing injury,' because the injury inflicted by accident set up a condition of things which medical men describe as disease. Suppose, in this case, a tack or some poisonous substance had cut the skin and set up tetanus. Tetanus is a disease, but would anybody contend that there was not an accident causing damage? An injury to the head has been known to set up septic pneumonia. . . . It does not appear to me that by calling consequences of an accidental injury a disease one alters the nature or the consequential results of the injury that has been inflicted. Many illustrations on what I am insisting on might be given. A workman in the course of his employment spills some corrosive acid on his hands; the injury caused thereby sets up erysipelas—a definite disease; some trifling injury by a needle sets up tetanus. Are these not within the Act because the immediate injury is not perceptible—because it shows itself in some morbid change in the structure of the human body, and which, when shown, we call a disease? I cannot think so."

This decision, and others on similar lines, was followed by the issue of an order by the Home Secretary extending the Act so as to include certain diseases frequently contracted by workmen in the course of their occupation, and among other diseases which are thus brought within the scope of the Act I may mention—

Poisoning by various chemicals, including nitrous fumes, arsenic, lead, mercury, phosphorus, &c.; epitheliomatous cancer due to pitch, tar, or tarry compounds; glanders; anthrax; subcutaneous cellulitis of hand (beat hand); cellulitis over patella (beat knee); cellulitis over elbow (beat elbow); inflammation of the synovial lining of the wrist joint and tendon sheaths; nystagmus (mining); ankylostomiasis (mining).

The scope of the Act has, by these decisions of the Court and orders of the Home Secretary, been thus considerably widened and more clearly defined, and the expensive litigations which marked the introduction of the Acts of 1897 and 1900 have been rendered unnecessary.

There are still, however, a number of conditions regarding which it is less easy to express a decided opinion in the light of our knowledge of their etiology and pathology, and in which there is room for doubt as to the extent to which they can legitimately be brought within the Act.

In the case of *cancer*, for example, the inclusion of paraffin cancer is admittedly justified, but it is more than doubtful if the decision come to in one of the County Courts in England that "cancer of the jaw resulted from a blow" can be maintained on pathological grounds.

The *rôle* of trauma in the causation of *appendicitis* has also been the subject of discussion. The question arose with regard to a patient of my own who had suffered from several attacks of recurrent appendicitis, from which he had recovered temporarily. He received a blow on the right iliac fossa, which was immediately followed by the symptoms of a fresh attack, which necessitated his removal to hospital. By the time he arrived there the attack was passing off, but there was a distinct swelling in the right iliac fossa, and other evidence of appendicitis. When these had settled down he was operated upon. The appendix was found fixed in a kinked position by adhesions, which had evidently resulted from the antecedent attacks of inflammation.

The opinion expressed in regard to this case, and it is probably applicable generally, was, that a direct trauma may set up an attack of appendicitis in an appendix which has previously

been the seat of inflammation, and has had its structure, position, or anatomical arrangements altered thereby, but that there is no convincing evidence that a direct blow may originate the disease in an otherwise normal appendix.

The question of *hernia* in relation to accident is a much more important one, because of the frequency of the condition and the ease with which it lends itself to a traumatic explanation. The popular term, rupture, at once suggests that the condition is attributable to a sudden traumatic cause. There seems little reason to doubt, however, that the modern view that the vast majority, if not all, cases of hernia, at least in the inguinal and femoral regions, are due to the presence of a congenital sac, is the correct one, and that trauma, strain, and violent muscular effort are only to be looked upon as causes determining the descent of intestine or omentum into this ready-formed sac. It was, however, only to be expected, in view of the liberal interpretation put upon the term *accident* by the Courts, that hernia would be accepted as an accident, whatever opinions surgeons might hold as to the morbid anatomy of the condition, and already numerous cases have been decided on these lines. Nor are we inclined to cavil at this. From the workman's point of view, he is equally incapacitated from earning his living by a hernia, whether that occurred into a pre-formed sac, or into a sac forced down, at the time of the accident, and the existence of this congenital defect, unknown alike to the patient and to his employer, could scarcely be held to rule him out of the Act, any more than an abnormally thin skull, or fragile tibia, should preclude him from sharing in its benefits if these bones are broken.

A man was referred to me who had fallen from a height of nine feet and alleged that he was thereby ruptured. The swelling, he stated, did not appear for about six weeks after the fall. He gave an excellent text-book description of hernia, but on examination none was forthcoming, and as the rings were normal and there was no impulse detectable, I had no difficulty in concluding that the case was not a genuine one.

The point which is of most importance to us is that of whether or not the hernia existed before the injury, which is alleged to have caused it. This question arose in the following case which came under my notice:—A man, over 50 years of age, was throwing bags of cement on to a bing, when he felt a severe pain in the groin, which sickened him and caused him to cease work. His doctor who had had occasion to examine his abdomen some time

before the accident was certain he had no hernia. When seen by me about four months after the accident he had a moderately large hernia which reached the scrotum, and which, but for the definite history, I would have concluded had been of some years' duration. After considering all the aspects of the case it was impossible to deny that the hernia might have been brought down by the strain, and the insurance company admitted the claim.

In the majority of cases there is little difficulty in distinguishing between a hernia which has recently appeared and one which has existed for a long period. In the case of a hernia which has come down for the first time as a result of a strain, or blow, or other form of injury, at the time the patient is examined for the purpose of compensation the hernia will occupy the inguinal canal, *i.e.* will be in the condition of a bubonocele, and the external abdominal wall will not be thinned out. It must be extremely rare for a hernia to be forced right down into the scrotum by injury.

A hernia which reaches the scrotum, in which the external ring admits two or three fingers, and in which the inguinal canal is opened out, and the abdominal muscles and fasciæ are lax and stretched, has in all probability lasted for a considerable period, and one would be very slow to accept the view that it was the result of a recent injury. If any part of the hernia is irreducible, the chances are still further in favour of its being of old standing, especially if the irreducible element be intestine.

These points refer to non-strangulated hernia. When strangulation is alleged to be the result of injury there might be greater difficulty in deciding the point. The same considerations would be raised, and if operation were performed the state of the parts would doubtless help in deciding the point.

While referring to the subject of hernia it may not be amiss to mention a case in which a man died as the result of *strangulation of the bowel by a band*. It was alleged that this was due to a strain at his work. The judge held that this was not proved, and as the onus of proof that the injury was due to work falls on the claimant, compensation was refused. It seems to be open to discussion whether this decision would cover all such cases. The existence of a band capable of causing strangulation of the bowel is in all respects comparable to a congenital hernial sac, and if it could be proved that the incidence of the symptoms of strangulation coincided with a definite injury, or muscular effort, it would be justifiable to argue that the condition was an accident.

I have been frequently asked by patients seeking advice at the Lock Wards for a "line," stating that a bubo was the result of a strain at work, in order that compensation might be claimed. As the strain was obviously a moral rather than a physical one, it is needless to say that these requests have been refused. It is sometimes more difficult to avoid attributing enlarged glands in the groin—apart from venereal disease—to strain, but as suppuration seldom occurs in these glands, which become enlarged apparently from extra work or strain, the question of compensation rarely arises.

Compulsory Operations.—I may now refer briefly to the subject of compulsory operations—a question which is frequently raised in proceedings for the review of compensation. It has been held that if a workman's continued incapacity is due, not to the accident, but to the fact that the workman has refused to adopt proper and reasonable treatment, the arbitrator may, on an application for review, order the payments to cease. But the employer is not entitled to insist on the workman submitting to any treatment that may be suggested by a medical practitioner.

Lord Adam in *Dowds* v. *Binnie* said: "It is easy to suppose a case in which a more or less serious operation is proposed with more or less probability of a successful cure, and in such a case I think it would be out of the question to say that a workman was bound to submit to it." In the particular case before him he said: "The injury was comparatively slight and the treatment proposed simple and common" (a slight operation on the thumb), "and brought within his reach, and the benefit which would have resulted therefrom not doubtful, and I think it was such treatment that any reasonable man would have adopted it!" Compensation was stopped. Numerous cases of this kind have been decided in the Courts. For example, in one case a man suffered from stiffness of the knee as a result of an accident. The doctors advised that the joint should be forcibly bent, but the man refused to have this done, and the Court held that he thereby forfeited his right to continued compensation. In another case, tried in one of the County Courts, the question arose as to whether a man should have a damaged eye removed to save the other eye from deteriorating. The judge held that he was not compelled to submit to this, facetiously adding that the statute did not include "trial by lancet."

This question has most frequently arisen in connection with cases of injuries to the fingers, in which after the wounds have

healed one or more fingers are left stiff and useless. In relation to one of these cases the point was definitely settled so far as the Scottish Courts are concerned. In a stated case, submitted to a bench of seven judges in the Court of Session, the question was argued whether a man who had had his hand crushed, and the second finger was left permanently crooked, was bound to submit to amputation of the disabled finger as advised by three different doctors. The workman refused, but the Court found that by so doing he was precluded from further right to compensation. They were of opinion that if he wished to be restored to health he was bound to submit to an operation which was reasonable and not attended with risk. In a similar case tried in the Liverpool County Court this decision was followed on the ground that the operation was safe and painless. I have personally had referred to me by insurance companies several such cases, and have in nearly all advised operation, but as a rule this has been declined by the workmen.

In this connection one cannot help being struck by the difference in action between those who have sustained their injuries in such a way as to entitle them to compensation, and those who have sustained them otherwise. It must have been the experience of everyone here—it has certainly often been my experience—to have men come and urgently request the removal of a disabled finger, which one was anxious to attempt to save. Now it may require the whole weight of the Scottish Bench to induce a man to part with a maimed digit.

In giving our opinion on such cases it appears to me that the only safe rule is to consider the case apart from the question of compensation, and if the operation is one which we would recommend to a patient outwith the Act as being calculated to restore his functions or add to his comfort, it is our duty to give evidence to this effect.

It is much more difficult when the operation itself is attended with risk to life or limb, and may fail to restore function, or even make matters worse. In a case of torn semilunar cartilage, for example, the employers held that if a man underwent "a slight operation" he would be able for work. No fewer than three surgeons gave evidence as to the simplicity and efficiency of the operation. The judge, however, held that while the medical evidence went to show that the patient would benefit by operation, he would not go the length of saying that he should submit to it, and would not stop his compensation. I think we shall probably

be agreed that this operation is in a different category from the amputation of a stiff finger and similar proceedings, and that one would be assuming considerable responsibility in advising a judge that the operation should be forced on the workman. It would be interesting to speculate what would happen if a workman submitted to such an operation, and things went wrong, resulting, say, in a stiff knee or in amputation. Who would be liable in damages? the employer, the surgeon who affirmed that the operation would improve the patient's condition, or the surgeon who performed it?

Again, in relation to hernia this question has frequently arisen. In the majority of such cases I have had no hesitation in recommending operation. In others I have advised against it. In one particularly, that of a man between 50 and 60 with some bronchitis, a weak heart, and generally broken down. It was admitted that, but for the hernia, he would have been able to resume the work at which he was injured, but I gave my opinion on the ground that if this patient had consulted me on the point apart from questions of compensation I would have advised against operation.

Abuse of the Act.—Whatever views we may hold regarding the wisdom of the policy underlying the Workmen's Compensation Act and similar Acts of the Legislature, and there may be room for difference of opinion on the subject, no one who is brought into contact with those who meet with accidents in the course of their employment can fail to recognise that in many cases the Act is grossly abused. We have only to contrast the course, progress, and duration of common surgical injuries in those of our patients who do not come under the Act, with those who do, to see that they are widely different. In the latter the period of disablement is not infrequently measured by months, as against weeks in the former. Nor is it to be wondered at that when a man can claim half wages from his employer, and perhaps the equivalent (or even more) of the other half from benefit societies, he should be in no hurry to resume work. The evil is accentuated by the action of a certain class of lawyers who trade upon these men, and by dangling before them the prospect of a considerable slump sum to close the claim, induce them to postpone returning to work and to institute legal proceedings, which do not always result in benefit to the injured man. It is not always easy for us, as medical men, to affirm that such persons are malingering and dishonest, although our insurance companies seem to imagine that nothing is easier. So long as a man has a scar, a swelling, or a stump to show, he has an asset of considerable value when before

a sympathetic judge or a jury, and no amount of medical evidence can explain such things away. Still more difficult is it to argue against a "pain in the back" or "in the sole of the foot," or "sleeplessness and nervousness." I need not take up your time referring to cases that have come under my own notice. They are all too common, and I am sure could be matched by others in the experience of every one present.

Numerous proposals have been suggested with a view to diminishing this abuse. There is no doubt, for example, that if a few cases of prosecution for perjury were successfully carried through, and the sentence of imprisonment included hard labour, the malingerer would receive what he least desires, and the example would be deterrent.

To stop the nefarious lawyer taking up speculative cases it has been suggested that he should be personally responsible for the charges of the defenders if the Court held that the case is one which should never have been brought; or that the costs of both parties should be lodged in Court before the case is called. There are honest cases, however, in which such rules would prove a hardship.

Perhaps the most practical method would be to simplify the procedure for calling in the medical referee. Under the Act (Schedule 1 (15)) an application for reference to a medical referee must be at the instance of *both* parties, and the referee's certificate is conclusive as to the matters referred. It is easy to understand that a workman who knows he has a weak case will refuse consent to a reference under these conditions. If the Act were changed to the extent of allowing a reference on the demand of *either* party, at any time, much might be done to shorten the period of disability and to prevent malingering.

The proposal that a medical assessor should sit with the judge is not free from difficulties. One judge, for example, in discussing this matter, expressed the opinion that a medical assessor would not be so valuable to him as the opposite views of medical experts. It must be kept in mind that there would of necessity be difficulty in obtaining the services of a suitable man to act as assessor, one who combined the necessary knowledge of medicine and surgery with the judicial habit of mind. And further it would be still more difficult to find one who with these qualifications had an intimate knowledge of the nature and conditions of the work which the injured man performed, and this after all is often the vital point in the case. It is not so much a question of what exact

pathological lesion has occurred, as of how that lesion impairs the man's ability to perform the particular manipulations of his work in the way they must be performed under the conditions of his employment. Even if such an Admirable Crichton could be found in the vicinity of every Sheriff Court, the cost of employing him would almost prove prohibitive.

While it cannot be doubted that, on the whole, the Workmen's Compensation Act has benefited the labouring classes, it is not without its disadvantages, and as time goes on these are becoming more manifest.

Already it has been the means of throwing many men out of employment. Insurance companies have found that at the present rates they cannot afford to run risks on account of men who are not in every respect physically fit, that is, to take "under-average risks." Already some companies are raising their rates, and this tends to make employers lower wages, or run their works with as few hands as possible. The result is that some insurance companies require that the men in large works shall be medically examined before being taken on. One large English railway company insists on this, and has given instructions to their medical officer to reject all men who have any abnormality, however trifling, which, if complicated as a result of accident, might give rise to a claim. The Shipping Federation in Leith insist upon a medical examination of all seamen before allowing them to sign on, and since the Act of 1906 came into force, I have had occasion to operate on a great many seamen for such conditions as hernia, varicose veins, varicocele, &c., to enable them to secure employment. If a man suffering from hernia, for example, declines to be operated on, he is either refused employment, or his papers are endorsed stating the condition from which he suffers, so that if a claim is subsequently based on this affection, there is documentary evidence of its previous existence.

In some trades also a black list of men who are known to have some abnormality which might give rise to a claim, or who have already been injured at work, is circulated among the different works, and these men are refused employment. I have personal knowledge of several men who are unable to obtain employment at their own trades owing to this practice.

Old men also suffer severely. In one shipbuilding yard the employers have given instructions that no one is to enter their employment for the first time who is over 40 years of age. Further, if a man has been in their employment, and from

slackness of work they are compelled to dismiss him, he is on no account to be re-engaged when times improve if he is 50 or over it (*Law Times*, 20th February 1909). A shipping federation has all its employees overhauled every time the ship is in a British port, and in one ship of 3500 tons register, within nine months, no fewer than six men had been put out of the stokehold alone on account of physical defects, which *might* become the ground of a claim.

The simplest and perhaps the only way to meet such hard cases would be to allow of men contracting out of the Act. As the law stands at present no man can contract out of the Act unless by a complicated procedure, which brings him under a scheme certified by the Registrar of Friendly Societies, which provides scales of compensation not less favourable to the workmen and their dependants than the corresponding scales contained in this Act (sec. 3 (1)). Except for the members of highly organised and well-managed trades-unions, this means of contracting out is impracticable.

There are many men, and I have come across them myself, who would run the risks they ran previous to the passing of the Act rather than be debarred from earning a livelihood, but they are legally prevented from doing so. Precautions would doubtless have to be taken to prevent employers making improper use of such a provision, but it is surely not beyond the ingenuity of the Legislature to devise such precautions.

NOTES ON A CASE OF BOTRYOMYCOSIS IN MAN.[1]

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It occasionally happens that the investigation of material sent for pathological examination reveals conditions very different from those expected. Sometimes, indeed, the result of microscopic and cultural examination is so little in accord with the clinical findings, and with the expected pathological conditions, that the methods employed are questioned, and the clinical allowed to outweigh the pathological evidence. This was the case recently in our experience in connection with the investigation of some pus supposed to be due to a streptothrix infection. Pus containing definite granules very similar in appearance to those characteristic of actinomycosis was stained by the methods recognised as suitable for revealing the streptothrix, but failed to show the presence of a mycelium. No organism could be seen but numerous cocci, and cultural investigation also resulted in a growth of cocci, which were regarded as a contamination, the supposed mycelial cause of the condition being taken to have escaped detection owing to defective investigation.

That this conclusion may possibly have been erroneous, and that the case may be an example of a pathological condition different from streptothrix infection, and yet distinct from ordinary coccal infection, further investigation of the case, as recorded below, seems to us to afford some grounds for thinking.

Clinical Account of Case.—In July 1909 a case was admitted to the Royal Prince Alfred Hospital under Dr. MacCormick, the clinical history of which is briefly as follows:—The patient, a healthy boy of 4 years, had had for nearly a year "a swelling outside the left orbit. The swelling was over the left temporal bone, and there was apparent softening of the bone outside the left orbit and swelling of the eyelid." There was also marked proptosis. (The clinical notes are defective in details.)

The clinical examination of the case pointed to sarcoma as a possible diagnosis. Dr. MacCormick incised the swelling; it

[1] Read before the New South Wales Branch of the British Medical Association.

was found to be caused by suppuration of a somewhat unusual nature in that the pus was scanty and contained numerous small yellow granules. Dr. Gordon Craig drew our attention to the peculiarly viscid character of the pus. There was also an unusual amount of granulomatous fibrous tissue. The pus was regarded by Dr. MacCormick, who has had a large experience in streptothrix infections, as being clinically characteristic of actinomycosis. The subsequent history of the case is that a fistulous sinus formed and fresh pockets of pus were discovered which required further operation. After thorough opening and scraping of these, and ordinary surgical treatment, they healed, the proptosis disappeared, and the child was discharged. Potassium iodide had been given under the impression that the case was one of actinomycosis. Examination of the pus by Dr. Matthews failed to reveal the expected actinomycotic fungus, and this was reported to the surgeon. The result was received by him with some scepticism, and further investigation was urged. We repeated the examination, with the same results, in that no definite evidence of a mycelium could be found.

Examination of the Pus.—Under low magnification the granules were found to exhibit a fairly definite outline, and were evidently composed of an irregular agglomerate of smaller masses. Under a higher power numerous refractile grains and some pus cells could be distinguished. Granules were crushed and stained by Gram's method and cultures made. No definite streptothrix, however, could be found, though the expectation of finding the fungus was so definite that in some of the films fibrin threads were wrested into the possibility of being such. A peculiarity of the granules noted was that they seemed to consist mainly of masses of cocci. The cultures revealed a growth in every instance of an organism identical in appearance with staphylococcus pyogenes aureus, and in pure culture. With this result, though considered unsatisfactory, it was necessary to be content, though the cultures and slides were kept, and note made of the condition.

Botryomycosis in a Horse.—Shortly afterwards, through the kindness of Professor Douglas Stewart, a specimen was obtained of a condition well known in veterinary pathology as botryomycosis. It consisted of a large tumour-like mass, weighing about 30 lb., which had been removed by operation from a gelding, aged about 14 years, in which it had existed for some 10 years. It had appeared as a gradually increasing tumour in connection with the stump of the spermatic cord, some three or four years after castra-

tion. Examination of the mass showed that it consisted of (*a*) dense fibro-cellular tissue, permeated with small abscesses and fistula-like passages, containing (*b*) pus which was of a peculiarly sticky character, and contained numerous small yellow granules.

(*a*) Under the microscope the tissue consisted of—(1) Fibro-cellular tissue, dense in some parts, and with few cell elements; in others consisting of elongated connective tissue cells with little fibrous tissue. (2) Between the strands or meshes of fibro-cellular tissue were collections of cells of the character chiefly of leucocytes, especially of the polymorphonuclear variety, but including also lymphocytes, eosinophile cells and large mononuclear cells, constituting practically a small abscess. At the margin of the abscess the tissue was of the nature of granulation tissue, with fibroblasts, ill-formed blood-vessels, and leucocytes; here, and in scattered groups through the fibro-cellular tissue, were numbers of large protoplasmic cells with large nucleus, obviously of connective tissue type and origin, and resembling somewhat the epithelioid cells in tubercle. In shape round, oval, or slightly elongated; near the central abscess they were round, and many of them, as large swollen cells, lying free in the abscess itself. (3) In the centre of the abscess was a peculiar body, evidently one of the "granules" in section, consisting of a mass of rather large cocci, staining with Gram, and surrounded by a kind of membrane, which stained differently to the cocci, and was difficult to differentiate; it appeared more like an alteration in the mass of cocci at the periphery of the granule. Scattered here and there through the abscess were occasionally seen small groups of separate cocci, and a few cases of phagocytosis by polymorphonuclear leucocytes were observed. The blood-vessels in the fibro-cellular tissue were mostly well formed, but a few thin-walled vessels were present, resembling venous sinuses.

This corresponds with the description usually given of the histological appearance of the condition, though different writers differ somewhat in details. The lesion appears to be somewhat of the nature of a granuloma, with an area of suppuration immediately surrounding the coccal masses, and surrounded by unusually dense fibrous tissue, the granulomatous tissue permeating the mass and spreading among the adjoining tissues in the form of fistula-like prolongations.

(*b*) Examination of the pus.—A film stained by Jenner's stain showed many neutrophile leucocytes, some lymphocytes, eosinophile and large mononuclear cells; also the large epithelioid cells de-

scribed, a few cocci in clumps, and the "granules." Under low magnification these latter were found to have a definite outline and to consist of agglomerated smaller masses, forming an irregular somewhat blackberry-like granule. Crushed and stained, a granule was found to consist of masses of Gram-positive cocci. These characters are distinctive of the pus found in the condition known as botryomycosis, and cultural examination yielded in every instance the characteristic coccal growth, indistinguishable from staphylococcus pyogenes aureus.

The close resemblance between this pus and that found in the case above described immediately arrested attention, and investigations were instituted to determine if possible whether there was sufficient resemblance to identify the two conditions. A small fresh supply of pus was obtained from the human case, and a comparative examination made culturally and otherwise, with the result that we are disposed to consider the case as probably one of botryomycosis occurring in man. The cultural and other evidence is given briefly below. A consideration of the condition botryomycosis may first be of interest.

General Account of Botryomycosis.—In equines, and occasionally in pigs, sheep and cattle, a condition is found characterised usually by great fibrous tissue overgrowth, and always associated with the presence of pus of the peculiar character described above. The commonest variety of the lesion is that known as scirrhous cord, or fistula of the cord, where, usually some few years after castration, a swelling develops, and subsequently discharges pus through a fistulous opening or openings. This may increase in size to an enormous extent, the condition being an extremely slow and chronic one. Occasionally fistulous passages extend along the abdominal wall, and burrow in various directions. The parietes may be perforated and the process continued in the muscles, or even intra-pleurally or intra-peritoneally. Occasionally also metastases occur, and abscesses are set up in the lungs and other organs. Other sites of the lesion are the shoulder and withers, where abrasions and rubbings are apt to occur from harness, in the udder, the muscles, bones, nasal mucous membrane, and occasionally internally. It is most common as a subcutaneous condition, especially where wounds or abrasions are frequent.

Friedberger and Fröhner[1] describe the condition as follows:—"By the term botryomycosis is indicated an infective disease, which is produced by the botryomyces fungus (botryococcus pyogenes; micrococcus ascoformans: m. botryogenus) and is characterised by

chronic inflammatory proliferations of connective tissue, so-called botryomycoma or myco-fibroma. . . . It is most frequently met with in the skin, and appears there as solitary or multiple tumours . . . their consistence is generally dense, but in some cases soft, or possessing a limited fluctuation. . . . On section . . . fluid spaces with soft granulation tissue, and pus cavities, in a sclerosed connective tissue."

Professor Kitt[2] describes the condition as "a productive inflammation which leads to the production of fibrous growths or cicatricial indurations, attended always by suppuration and fistula formation; or the production of brownish or yellowish-red foci of softening, which are caused by the botryomyces ascoformans: . . . the tissue invaded becomes the seat of chronic inflammation, producing great induration or thickening. The growth of the organisms brings about foci of softening of a viscid purulent type."

As regards the exact nature of the disease and of the causative agent, there has been, and apparently still is, great disagreement. That the "botryomyces fungus," as it is usually termed, meaning thereby the peculiar coccal agglomerations constituting the characteristic granules, is the causative agent, appears to be generally accepted, though Moore[3] is of the opinion that the name botryomycosis is often applied to a variety of lesions found in connective tissue, and that several species of micro-organisms are capable of producing it. The evidence points strongly, however, to the other view as probably correct.

Bollinger, who in 1870 was the first accurately to describe the disease, held the view that it was due to a specific fungus which he named zoogloea pulmonis equi. Later Rivolta renamed the fungus discomyces equi. Later still, Rabe and Johne, who described further cases, named it micrococcus botryogenes and m. ascoformans respectively. Kitt, Hell, de Jong, and others investigated the cultural and pathogenic characters of the organism extensively, and reached the conclusion that it was probably a member of the group of pyogenic cocci. Pure cultures were found to kill guinea-pigs on subcutaneous injection, with a septic-æmic condition; in sheep, pigs and goats an acute inflammatory œdema and suppuration was produced. Hell states that he always obtained staphylococcus pyogenes aureus in pure culture from botryomycosis.

Ostertag[4] says "it is not impossible that botryomyces may be pathogenic for man in a form other than in the horse, perhaps as a purulent organism." It is evident that when isolated in pure

culture and investigated by inoculation experiments, the organism behaves as a rule like an ordinary pyogenic coccus.

In the pus from abscesses produced by injection of pure cultures of the disease, the typical botryoidal granules are said not to be present, though Wooldridge[5] and Bowhill[6] state that if the condition becomes chronic such agglomerations may be found.

The nature of the coccus causing the disease has been carefully studied within recent years also by Poncet, Dor, Parascandolo, M'Fadyen, and others. Friedberger and Fröhner, in the edition of their text-book of 1908, state the results of these investigators as follows:—"Although the identity of the botryomycosis parasite with the ordinary pus coccus (staph. pyog. aureus) was formerly maintained (Hell, Kitt, de Jong), the specific nature of the fungus appears to have been established by the more recent researches of Parascandolo, Poncet, and Dor. The results of inoculation experiments on horses testify against their identity; so do the various bacteriological, physiological, biological, and serodiagnostic relations of the two specimens of fungi. The botryomyces fungus can assume pyogenic properties; but the staphylococcus can never become botryogenic, *i.e.* lead to the formation of mycofibroma. The staphylococcus forms golden yellow cultures at all temperatures, the botryomyces fungus only at 64·4° F. Bacteriologically the two resemble each other in form, in staining with aniline dyes, and grape-like arrangement, but their development on gelatine is different, and they display a remarkable divergence in power of immunisation. Only the pyogenic, not the botryogenic, properties are common to both."

Unfortunately we have access to very little original literature dealing with the subject, and are to a considerable extent confined to references (always of a most general kind) in the text-books of veterinary pathology and English veterinary periodicals. The most recent reference to the disease which we have seen is one by P. Chevasse,[6] in the *Annales de l'Institut Pasteur* for June 1909, dealing with the staining reactions of actinomycosis, botryomycosis and actinobacillosis. He states that in botryomycosis the granules consist of cocci which stain with Gram, and a matrix or "gangue," which is formed of degenerated cocci. The cocci and the matrix constitute the granule, and it consists of agglomerated staphylococci.

The condition referred to as "actinobacillosis" is one which seems to us of great interest in connection with the disease with which we are dealing. It was described first by Lignières and

Spitz,[10] who, working in Argentina, described a disease characterised by a condition clinically resembling actinomycosis, the only recognised difference being the presence in the former of thickened lymphatic cords. Pathological examination, however, revealed the interesting fact that the condition was due to a definite bacillary infection, the organism being remarkable in being Gram-negative, and in presenting definite cultural and morphological characters, quite distinctive and different from a streptothrix. Higgins[11] states that the bacillus resembles in a marked degree that of fowl cholera.

A point of interest is brought out by Chevasse,[6] who found that while the bacilli themselves in actinobacillosis do not retain the stain by Gram's method, the agglomerations of the bacilli, where they are in direct contact with the tissues, give a positive Gram reaction; and that in this they resemble botryomycosis and actinomycosis, since in these conditions also there is produced at the point of contact with the tissues an altered condition of the fungus, giving a positive result with Gram's stain, and also, in common with actinobacillosis, giving distinctive staining reactions with other special methods.

Botryomycosis in the human subject has been described by a number of observers, chiefly in France. Friedberger and Fröhner[1] state that "Poncet and Dor have observed four cases. Siethoff saw conjunctivitis palpebrarum of botryomycotic nature, and accompanied by nodular formations, develop in a man who had charge of a horse suffering from fistula of spermatic cord. Other cases have been described." We have not been able to obtain the original accounts of any of these cases.

Comparison of the Conditions found in the Boy and in the Horse.—With the evidence which seems to us to justify a tentative diagnosis of botryomycosis in the case we are considering—or at least of a condition involving such an alteration in the toxicity and properties of the staphylococcal organism causing it as to constitute a very interesting parallel to that disease—we do not here propose to deal fully; but a brief *résumé* may be of interest.

Clinically, there was a condition recognised as different from an ordinary coccal abscess in its chronicity, in the nature of the pus—viscid, and containing yellow granules—and in the presence of secondary pockets of pus amidst much fibrous granulation tissue. The clinical characters of the abscess were, indeed, so unlike an ordinary coccal condition that a definite diagnosis of a mycotic origin was made. The low power appearance of the granules

showed a distinct resemblance to those found in the botryomycotic pus from the horse. The outline was certainly less definite and the granule less sharply defined. This might easily be explicable, however, by the different clinical course and origin of the pus in the two cases.

Stained in various ways, the granules, both from the horse and from the boy, were found to consist of dense masses of cocci, Gram-positive, with surrounding pus cells, and some indefinite material.

Culturally, on agar, gelatine, serum, and all the ordinary media, the organisms from the two cases exhibited identical characters. Gelatine is liquefied in a precisely similar manner. In lactose and glucose, litmus, peptone water, and in litmus milk the reactions are identical. The pigment productions at various temperatures were also found the same.

The microscopic characters of the cocci from the cultures were identical with all methods of staining employed.

Several strains of pyogenic aurococci were examined at the same time. Some of these showed no points of difference from the two botryomycotic cultures, in others certain differences appeared, as is usual with different strains of aurococci.

In fact, as far as our investigations have gone, a greater distinction could be made between different strains of aurococci than between the two botryomyces organisms and certain strains of aurococci.

Inoculation Experiments.—(a) *Subcutaneous.*—Rabbits were injected with emulsions of the growths on agar slopes of the two botryomyces cultures and two aurococci. The two rabbits injected with ordinary pyogenic aurococci died from septicæmia on the second day. The two injected with botryomyces developed local boggy swellings, slightly larger with the horse strain than with the human. These gradually diminished in size and ulcerated. The pus from both contained cocci in clumps, but no true botryoidal masses. The nodule produced in the rabbit by injection of the human strain was excised after four weeks, and sectioned; it consisted of localised collections of pus enclosed by dense fibro-cellular tissue, very suggestive of the structure of the original botryoidal tumour from the horse. The nodule was not excised from the rabbit injected with the equine strain in order to ascertain whether typical botryoidal granules would later form; but the pus was gradually discharged, and some eight weeks after injection a small cicatrix was all that remained, no typical mycofibroma being formed.

(b) *Intravenous.*—Rabbits were injected with the human and with the equine strains of organism, and with two ordinary pyogenic aurococci. The rabbits injected with the human strain and those with the two aurococci died with septicæmia. That injected with the equine strain, though very sick, did not die, and is still living and apparently well. In this one instance the findings in the two cases exhibit a divergence. Equine botryomyces can undoubtedly produce a fatal septicæmia; and the greater chronicity of the equine case, leading possibly to an altered condition of virulence of the organism, might explain this difference in conduct.[1]

Serum Reaction.—No satisfactory examination of the serum of the case could be instituted, since when the investigation was proceeding the case was discharged. An examination of the opsonic index of the patient's serum towards the two strains, and towards two pyogenic aurococci, gave, to the equine 1·38, to the human 1·10, and to the two pyogenic aurococci 0·9 respectively. The horse unfortunately died as the result of the operation for removal of the tumour.

Conclusions.—Cultural and experimental tests are still in progress. For the present we suggest that there is sufficient evidence to make it probable that the case described, and possibly others not recognised, represent conditions of botryomycosis occurring in man. In our own experience in Australia we can recall a few cases in which the clinical features of the lesion, and the naked-eye appearance of the pus, were regarded as characteristic of actinomycosis, and yet the most careful microscopic and cultural examination failed to reveal any streptothrix.

We wish to acknowledge our indebtedness to Dr. MacCormick for the data which he put at our disposal in connection with the case, and to Professor Douglas Stewart for much kind assistance with literature, and for the botryomycotic material from the horse. We desire also to thank Dr. Matthews, Dr. Hoets, and Dr. P. Walton Smith for valuable help.

REFERENCES.

[1] Friedberger and Fröhner, *Text-Book of Veterinary Pathology*, translated by Captain Hayes, 1908, vol. ii. pp. 405, &c.

Kitt, Professor, *Text-Book of Comp. Anat.*, translated by Cadbury and Smith, 1906.

[3] Moore, *Path. of Infect. Dis. of Animals*, 1906.

[1] We have since found that intravenous injection of another rabbit with a larger dose of the equine strain led to death within two days.

[4] Ostertag, *Handbook of Meat Inspection*, 1906, translated by Willcox, p. 662.
[5] Bowhill, *Bact. Technique*, 1902.
[6] Chevasse, *Annales de l'Institut Pasteur*, June, 1909.
[7] *Ibid.*, *Revue General du Méd. Vét.*, 1905.
[8] Wooldridge, *Journ. of Comp. Path.*, 30th September 1907.
[9] Wolstenholme, *Journ. of Comp. Path.*, vol. ix. 1906, p. 199.
[10] Lignières and Spitz ("Actinobacillosis", *Recueil de Medecine Vétérinaire*, 1903, quoted by Chevasse and others.
[11] Higgins, Bulletin No. 1, Biological Laboratory, Department of Agriculture, Canada.

OVARIAN EPILEPSY AND ITS TREATMENT BY OPERATION.

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In considering this condition, which brings within its boundaries the subjects of nervous disease and pelvic surgery, one is confronted with the difficulty of accurately estimating how far it lies in one or other domain. But the same difficulty is present in all cases of what might be termed "reflex epilepsy," by which I mean epilepsy apparently dependent on, or increased by, some exciting cause originating in an organ outside the central nervous system. It is this very difficulty, however, intensified by originating in such an organ as the ovary, which has such close relations by its secretion with the nervous system, and its intermittency of function, that confronts the gynæcologist, and makes him hesitate before advising operative interference.

That the generative organs of a woman may give rise to reflex nervous symptoms is granted by everyone, but it is not generally accepted that the removal of these organs causes the disappearance of the nerve trouble, and especially in the case of the ovaries, many would hold that the painful symptoms of the premature menopause are almost worse than the original disease. Before considering the matter at length, I will relate two cases which I am enabled to publish through the kindness of Dr. Haultain, who operated on both.

The history of the cases is as follows:—

Case I.—A. B., single. Complains of fits, which come on a few hours before the menstrual period. Duration 5 years.

Menstrual History.—Periods started between 13 and 14; last 5 to 6 days; 28-day type. There is great pain for a few hours before the period and during the first day, never amenorrhœa nor menorrhagia.

Nervous History.—Fits first came on about 6 months after the periods set in. They occurred regularly a few hours before bleeding was apparent, and did not occur during the inter-menstrual period. With the onset of the fits, patient became unconscious, fell down, and frequently injured herself. She never bit her tongue. Only once, in a very severe fit, did she pass water. The duration of a fit was from ½ to 2 hours, when she again became conscious, and complained of a very severe headache, which lasted several hours. She

was drowsy and wished to sleep. If 30 grs. of potassium bromide were taken the night before a convulsion was due, it usually prevented the fits, or if taken regularly in 10 gr. doses, thrice daily, it prevented their appearance. Latterly, bromides failed in their effect, and fits were occurring in spite of increased doses.

Vaginal Examination.—The uterus was found to be normal in size and position, but the left ovary was enlarged, and tender. Pressure on it did not produce a convulsion.

Diagnosis of ovarian epilepsy was made, and an abdominal section was performed. The left ovary was removed in the usual manner. It was noticed that when the ovary was pulled up into the abdominal wound the patient stopped breathing, became cyanosed, and remained so until the ovary was removed, when she resumed breathing, and gave no further trouble, though the other ovary was freely handled. It appeared to be normal, and was not removed. Patient was discharged at the end of a month after an uninterrupted convalescence.

After-History.—Three months later she had a fit at the time of a period, when she had been having a good deal of hard work, and was feeling run down. Since then—one year—there have been no fits, and her general health is very much improved.

On section the ovary showed follicular ovaritis, and was increased in size.

Case II.—C. D., single. Complains of fits at the time of the menstrual period.

Menstrual History.—Periods started at the age of 12: last 5 days: 28-day type. Pain the day before and first day of the period. No amenorrhœa nor menorrhagia.

Nervous History.—Fits came on at the same age as the period first appeared, and were confined to the day before and the first day of the period. They did not occur every month, and not at all between the periods. Bromides stopped them, but as soon as the medicine was discontinued the fits recurred.

Dilatation and curettage were performed, and there was a great improvement for 2 years, after which the fits returned. Bromides again controlled them for a time, but later failed altogether. Then the fits began to appear between the periods. In a fit, patient became unconscious, fell down, and bit her tongue.

Vaginal Examination.—Uterus is normal in size and position, nothing abnormal palpable in the ovaries.

A diagnosis of ovarian epilepsy was made, and abdominal section was performed. The ovaries seemed normal, but both were removed. Convalescence was uninterrupted, and since then—3 years ago—patient has not had a fit, and her general health has improved very greatly.

Nothing abnormal was discovered in the ovaries.

Though generally termed menstrual epilepsy from the coincidence of the fits with the menstrual period, it is apparent, from the cases just detailed and all other similar cases recorded in literature, that it is not due in any way to menstruation, but that it is an ovarian condition. The first point of importance is the fact that all are not cases of true epilepsy, but that many are cases of hystero-epilepsy, as evidenced by the prolonged nature of the fits, the absence of any injury to the patient in the fits, of biting of the tongue, and of unconsciousness, or involuntary micturition. When the varied character of hysteria and the great difficulty experienced in curing it is considered, this would seem to be rather a contra-indication to such a drastic measure as abdominal operation, but most of the German authors seem to be of the opinion that the prognosis is more favourable in hystero-epilepsy than in true epilepsy, on the ground that it is a much less intractable condition. Perhaps the moral effect of such a serious step may have a good mental effect on the patient, and thus act in bringing about the desired cure.

Etiology.—The etiology of this condition seems to follow the etiology of epilepsy in general, inasmuch as the parents are frequently of the degenerate type, suffering from insanity, chronic alcoholism, &c., or, if not, in many cases some nerve stigma can be found in a near relation.

Morbid Anatomy.—It may be said that in the majority of cases there are organic changes discoverable by the naked eye in the ovaries, but if not, they are usually found, on microscopic examination, to be diseased. Even when they are apparently normal it is possible they may to some extent be diseased, as the constantly recurring changes of a normal ovary makes its pathology a matter of immense difficulty. Out of the 33 cases I have been able to discover, including the 2 I have just related, the ovaries appeared normal on 5 occasions; in 15 cases they were cystically degenerated; in 4 they are described as merely hypertrophied; in 4 cirrhotic; in 2 as adherent, without mention of any change in them; in 1 as degenerated; in 1 there was a blood cyst; and in 1 no mention is made of them, but the uterus is described as impervious. In addition to ovarian changes, the other morbid conditions of the genitalia were—the case mentioned above in which the uterus was impervious; 2 cases in which there was a hydrosalpinx, in addition to cystic ovaries; in 2 tubal inflammation; in 1 an infantile uterus; and in 1 a broad ligament cyst.

It would seem, from a consideration of these figures, that follicular ovaritis is the commonest pathological condition of the ovary associated with or exciting the epileptic condition, but no stress need be laid on this point.

Symptoms.—The symptomatology of the condition is roughly that of epilepsy and hystero-epilepsy in general, with special reference to certain points, *e.g.* the age of onset, the period of occurrence, the effects of bromides in controlling the fits, and the accompanying gynæcological symptoms. It is a point of the first importance that the epileptic attacks should have coincided in their first appearance with the onset of menstruation in the patient, or at least their first appearance should be at a menstrual period though some years after puberty. Otherwise it is impossible definitely to class the case as one of ovarian epilepsy and not as an ordinary epilepsy, with the attacks intensified by a menstrual period, which is commonly found to be the case. The importance of this cannot be overestimated, for, as a rule, epilepsy tends to advance into a more pronounced mental degeneration at the menopause, and one then would be intensifying the disease instead of curing it by removal of the ovaries. Amongst the cases I have collected, the average age of onset was 18, the oldest being 35 and the youngest 8. In cases of true ovarian epilepsy the fits are confined for some time to the days coinciding with menstruation, and during the inter-menstrual period the patient is free from any attack. It is only to be expected that if the condition is allowed to go on unchecked, it will in time affect the patient between the periods, but the fits will always be much worse just before or during the period. In 14 of the cases I have collected the fits were confined to the days of the menstrual period; in 10 they were also present during the inter-menstrual period, but were greatly intensified during the period; and in 9 there is no report as to whether the fits were entirely menstrual or not.

It is obvious that the effect of treatment by bromides must be a strong factor in this condition, as those cases which are susceptible to the drug will not come into the hands of the gynæcologist; but if they do, and the diagnosis is clear, there is no reason why operation should not be resorted to. In 16 cases bromides are stated to have had absolutely no effect on the fits, in 1 they are said to have ameliorated the condition, and in the others no mention is made of treatment by sedatives.

Of the cases collected, 23 were described as true epilepsy, 9 as hystero-epilepsy, and 1 as a combination of the two.

In only 10 is there any mention made of symptoms peculiar to the generative organs. In 6 there was dysmenorrhœa, associated in two instances with menorrhagia; in 4 cases there was amenorrhœa, in one of which the uterus was found after removal to be impervious. In the 2 cases also which I have just related there was dysmenorrhœa.

Prognosis.—The prognosis of operation is in the main distinctly favourable, 22 having been completely cured of their epilepsy, though in 2 there were a few fits in the first 6 months after operation. (Spratling records only *one* cure in his series of nine.) Five showed improvement more or less marked, and in six there was no change—of these 5 were cases of Spratling's. Though in 4 of them there was an improvement in the general condition and disposition, there was no change in the epileptic state. The other case in which there was no change was a case of Leppman's, in which some septic infection had occurred, and an inflammatory mass formed on the left side in the region which the ovary had occupied. It may be inferred that this acted as an excitant to the unbalanced nervous system just as the ovary had previously done, and accounts for the failure. Thus there is a percentage of 66·5 complete cures, 15 per cent. improved, and 18·5 per cent. failures. This under-estimates the number of cures in reality, as it was found in several instances that cases improved by operation have then become amenable to treatment by bromides, even in small doses, where formerly colossal doses had had no effect.

Treatment.—The treatment of ovarian epilepsy is debatable ground between the physician and the surgeon, to an extent which is surprising in these days of surgical skill. The reason of this is probably the well-known fact that epileptic seizures are always more severe and numerous before or after the menstrual periods, and this no doubt led to operation being performed in cases where the exciting cause was not due to the ovaries, but was intensified by the unstable condition of the nervous system that the menstrual period so often produces even in healthy women. Aldren Turner, in his book on *Epilepsy*, writes:—"Dysmenorrhœic conditions in women require the necessary attention. The fact that epileptic seizures frequently recur just before or after the menstrual period is no argument in favour of any exciting local cause being found in the pelvic organs. The old procedure of removal of ovaries, or other portions of the female organs, was based on an entirely mistaken view of the nature and cause of the epilepsy." But in a preceding paragraph

he writes:—"In cases of epilepsy arising from traumatic lesions of the peripheral nerves, the source of irritation should be excised." I should say that epilepsy with ovarian aurae, such as were present in the cases I have related, whether the ovaries on examination were felt to be enlarged, cirrhotic, or even normal, are examples of "lesions of the peripheral nerves," though not perhaps traumatic. If one is justified in removing any source of peripheral irritation at all—which seems to be the starting-point of epilepsy—one is entitled to consider carefully the cases in which the ovaries appear to be the determining factor of the disease, with a view to their operative removal. Of course the effects of bromide must be tried first, as it is so successful a drug in the treatment of epilepsy, but should it fail in its effect, there can be no hesitation in resorting to abdominal operation, as even though the operation do not cure the patient entirely, it may make her epileptic condition amenable to treatment by bromides.

In connection with the medical treatment, I would like to say a word shortly about the gynæcological treatment short of operation. I know of two cases, but have not obtained sufficiently full notes to give them in detail. In one, a woman of 34, she took what seemed to have been epileptic seizures, invariably in her sleep, with an aural sickness. If she vomited the fit was aborted. These fits were almost but not quite limited to the menstrual periods, and careful dieting and stomach drugs did not affect the convulsions. She had dysmenorrhœa and menorrhagia, and on examination enlarged ovaries were found on both sides, as well as an enlarged uterus. Curettage, vaginal douching, and plugging with 10 per cent. ichthyol and glycerine were employed. As a result she had no more fits, but as she went to South Africa three months later I cannot tell if the cure was permanent.

As she had no fits while under observation I cannot say whether it was a true epilepsy or not.

The other was a case of a girl of 21, who suffered from what she called fainting attacks at the time of her periods, but they seemed, from her description, to be attacks of petit mal. She had never fallen down, but just lost consciousness for a few seconds and turned very pale. She also suffered from menorrhagia and dysmenorrhœa. She was treated in the same way as the previous case, and has had no attacks since; that is nearly a year ago.

Though one hesitates to advise abdominal operation in cases of hystero-epilepsy, it may be noted that Leppman considers such cases much the most favourable for operation, and it is from

success in them that he considers it warranted to operate in true epilepsy. Of the 33 cases, 24 were cases of true epilepsy, of which 16 were completely cured, 3 improved, and in 5 there was no change, which gives a percentage of complete cures of 66·5. There were 9 cases of hystero-epilepsy, of which 6 were completely cured, 2 improved, and 1 failure, which again gives a percentage of 66·5 cures.

The circumstances of the patient's social status must also be considered. Should she require to earn her living and the seizures affect her doing so, it is more imperative to give her the chance of cure by operation than in a patient who has no call to live by her own exertions.

Probably a number of failures have been recorded through operation being postponed too long. The number of years wasted in vain attempts to cure the condition by means of drugs may allow such a state of nerve instability to be established that no operation for removal of a peripheral source of irritation can possibly be of any use.

The one point which is essential is to be sure that the epilepsy is ovarian in origin, and that can only be satisfactorily settled by carefully considering the history of the onset of the disease. The question as to whether or not the ovaries are felt to be enlarged on vaginal palpation is, to my mind, a matter of comparative indifference. If they are felt to be diseased, it is an additional indication for operation; but should they feel normal, it is no contra-indication, and even if at the time of the operation they appear normal to the naked eye, they should be removed, as the microscopic pathology of the ovary is such as to be impossible of recognition in quite a number of cases. Also the fact that even on microscopic section the ovaries have been found normal in cases of ovarian epilepsy, cured by their removal, as noticed in the cases of Schroeder, Schramm and Pinkerton, shows that they should be taken away, whether they look healthy or not to the naked eye.

As regards the actual operation, it is usually the simple one of oöphorectomy, and there is no difficulty in its performance; but should there be discovered at the time of operation any pathological condition of the other genital organs, such as salpingitis, or, as was seen in Pinkerton's case, a uterine fibroid, supravaginal hysterectomy should be performed at the same time.

As the uterus is of no use without the ovaries, and as its removal does not add greatly to the length or risk of the opera-

tion, it might be safer to perform hysterectomy on every occasion; for the failure of asepsis in the slightest degree is dangerous, as any adhesions to the stump of the pedicle or cellulitis in the ovarian region are against a cure being established, as was seen in one of Leppman's cases. For that reason, perhaps, hysterectomy is an advantage, owing to the ease with which every raw surface is made extra-peritoneal and free from adhesions.

Moreover, it involves a more complete clearance of the nerves in the region, and is more likely on that account to be efficacious. This view is supported, to a certain extent, by a fact which must be apparent to most operators: namely, the much greater pain suffered by patients subjected to oöphorectomy, compared with patients in whom hysterectomy has been performed.

THE STATE REGISTRATION OF NURSES.

(Contributed.)

It is not improbable that many practitioners in Scotland find some difficulty in arriving at any definite conclusion regarding the merits or demerits of the different Bills for the establishment of State Registration for Nurses which have been recently before Parliament. It will be recollected that the Bill introduced by Lord Ampthill passed through the Lords successfully. Facilities were not, however, given it in the other House, the divided state of opinion on the whole question justifying the attitude of the Prime Minister in this regard. Doubtless the promotion of Mr. Cleland's Bill, voicing a large section of Scottish opinion, did much to emphasise the fact that there is still a long way to travel before all the conflicting interests involved in the question will be reconciled.

Lord Ampthill's Bill is the result of the efforts of the Society for the State Registration of Trained Nurses. Every credit must be given to this energetic body for the way in which it has kept the question of registration before the nurses and the public. Its weakness, however, lies in the fact that while it doubtless represents a large number of individual nurses, it has not commended itself to the majority of the great training schools, and it will appear to many that unless the cordial co-operation of these schools is secured any scheme of registration is likely to end in failure. That the opposition of some of the great hospitals to registration is unfortunate and short-sighted few will deny. It seems only reasonable that after three years' arduous training the finished nurse deserves all the protection that registration by the State can give her. What that protection is worth is another matter. It will be a long time before medical men who have obtained every satisfaction in the past from partly trained women will insist on the nurses whom they employ producing a certificate of registration. Such a certificate, moreover, will only imply a certain standard of training, and will in no way prove that the holder has those qualities of conscientiousness, tact, and gentleness which, in many cases, are more valuable to the patient than technical skill. And it is difficult to believe that registration will put an end to those instances of masquerading as nurses and fraudulent imposition which we see so frequently reported in the

pages of a leading nursing periodical. While believing, then, that registration is the due of the trained nurse, and is to be procured as quickly as possible, we must not hope for too much from it. It has, nevertheless, rightly received the support of the medical profession, as represented by the British Medical Association.

During the past few years a Scottish Committee for Promoting the State Registration of Trained Nurses has met regularly in Edinburgh. It is, however, noteworthy that the interest of Scotland was never aroused. The general attitude, indeed, seemed distinctly hostile to registration. When the Ampthill Bill was first published the great majority of the Edinburgh Committee at once realised that it could never receive a favourable reception in Scotland. In the first place, the representation on the Council allotted to that country was ridiculously inadequate. In a governing body of sixteen members only one place was secured to Scotland for the first five years of the working of the Act; thereafter one nurse and one medical man might be the only Scottish representatives. Secondly, the general constitution of the Council was unsatisfactory, the training schools as such being totally unrepresented. It is instructive to compare this arrangement with the composition of the General Medical Council, on which eight out of thirty-four places are definitely secured to Scotland, and more than two-thirds of the total seats are filled by representatives of the teaching and examining bodies.

The majority of the Edinburgh Committee, then, decided not to support the Ampthill Bill, and endeavoured to enlist the sympathy of the matrons and nurses of Scotland, who had hitherto shown a considerable amount of apathy regarding the question of registration, to which, indeed, not a few had been actually opposed. But in the face of a common danger differences of opinion were forgotten, and the response to the appeal was immediate and enthusiastic. At a meeting in Glasgow in February 1909 the Association for the Promotion of the Registration of Trained Nurses in Scotland was constituted, under the presidency of Lord Inverclyde, and with Dr. Mackintosh, the Superintendent of the Western Infirmary, as its honorary secretary. As the list of its members shows, it is thoroughly representative of the matrons, training schools, nurses' associations, and medical men of Scotland. The Association recognised from the first that one single Register for the three kingdoms was much to be desired, but the attitude of the supporters of Lord Ampthill's Bill left it no option but to promote a Bill for Scotland. This was accordingly done, and the Bill associated with the name of Mr. Cleland came into being.

As regards the differences between the two measures, we have already seen that the Ampthill Bill ignores the training schools as such. The Cleland Bill, while securing adequate representation for nurses, also considers the interests of the schools. It imposes a lower inclusive fee for registration than does the English measure —a matter which is of no little practical importance. Without entering into minor distinctions, the remaining difference between the Bills is that Lord Ampthill's insists on a one portal system and central examinations, whereas Mr. Cleland's accepts the certificates of recognised training schools.

An attempt was made to reconcile the supporters of the various proposals for registration, and a conference was held at Westminster, to which the Association was invited to send delegates. This meeting was also attended by the supporters of a third Bill—that promoted by the Royal British Nurses' Association. When, however, the Scottish delegates arrived in London they found that the supporters of the two English Bills had apparently settled their differences, and were prepared with resolutions which they endeavoured to impose on the Scottish representatives by the simple process of outvoting them. Seeing that in the circumstances nothing in the way of a genuine conference was either intended or indeed possible, the latter considered that their only course was to withdraw from the meeting. They had at least received an object-lesson of the attention which would be likely to be paid to Scottish needs or grievances did the Ampthill Bill become law.

Since this so-called conference the situation has been still further complicated by the formation of yet another body—the Scottish Nurses' Association—which, under the presidency of Sir William Macewen, is working in favour of the Ampthill Bill and a single register. It can hardly, however, be said to be representative of the best Scottish nursing opinion, and no matron of any of the principal training schools has joined it. This should hardly commend it to the promoters of the Ampthill Bill, who have quite rightly recognised the importance of matrons by securing to them five out of the sixteen seats on the original Council.

It is much to be desired that even now some compromise should be arrived at between the different bodies interested in the question. We have already seen that originally the general feeling in Scotland was against registration, and there is little doubt that this was due to disapproval of the proposals in the Ampthill Bill. The fact that now opinion is almost solidly in favour of registration is

entirely due to those who from the first have been pledged registrationists being prepared to meet reasonably the objections of the critics, and it may be suggested that a similar attitude on the part of the English registrationists would do much to bring the great London hospitals, without whose help no system can be really satisfactory, into the general line. So far as Scotland is concerned, it seems probable that it would be content to receive adequate representation on the governing body, and have a branch Council to deal with Scottish affairs and examinations. If this was conceded, the objections to the central examination might well be waived. In any case, some sort of examination will have to be held for those nurses who receive their training in very small hospitals.

In proposing, however, to accept the certificates of the great training schools as the qualification for registration, the promoters of the Cleland Bill were only adopting the conclusions arrived at by the Select Committee of the House of Commons, which had the question under consideration in 1905. The Committee's report contains the following recommendation:—"That the Central Body should decide what constitutes a recognised training school for nurses, taking into consideration the number of beds, the accommodation for probationers, the facilities afforded for learning, and the general standard and conduct of the examination; for this purpose the Central Body should have the power of inspection. Your Committee further recommend *that the examination be held at and by the training school*." These suggestions seem eminently sensible, and carry weight as coming from an independent body of practical men. But, nevertheless, if a combined Bill was brought forward satisfactory in other ways to Scotland it would be a pity to lose it if the one portal system is made a vital point.

Some, and among them will be those who have had most extended experience in nurses' examinations, will regard the examination as a very secondary point. It can never be an adequate test of a woman's fitness and capacity as a nurse. Many of the worst nurses do best in examinations, whereas really capable, gentle, and conscientious candidates often have the greatest difficulty in scraping through. Many medical men will know thoroughly trained women who, in their eyes, are ideal nurses, but who, if faced with an examination paper, would fail hopelessly. In some quarters, again, there seems to be a tendency to estimate the efficiency of a nurse by the number of lectures

which she has attended. There is now a demand that bacteriology and venereal diseases should be added to the subjects for courses. What should always be remembered is that the unfortunate probationer has a long and strenuous day in the wards, and that at the end of it she is seldom fit to assimilate much theoretical knowledge. And as there is presumably no intention to institute a new class of female practitioners, the theoretical training should be kept as simple as possible, while no pains should be spared to give adequate practical instruction and to develop those moral qualities which, after training is over, make the whole difference between a good nurse and a bad one.

CLINICAL RECORDS.

NOTES OF A CASE OF CERVICAL DISLOCATION.

By J. M. COTTERILL, *F.R.C.S.*,
Surgeon, The Royal Infirmary.

D. M'K., aged 28, was admitted to my wards in the Royal Infirmary on 20th July 1909, complaining of a painful and stiff neck.

History.—Ten days before admission the patient was scuffling with another man. He was seized round the neck by the arm of his opponent and his neck violently twisted. Severe pain was immediately felt, radiating up over the back of the neck and occipital region. The next day the pain was intensely severe, and the neck was quite stiff. The pain has been somewhat relieved by anodyne liniments, but the stiffness still remains. There is nothing in the patient's personal or family history to suggest tubercle, previous traumatism, or any other predisposing cause.

Examination on Admission.—The patient was able to walk into the ward; he holds his head stiffly, with projection forwards, and chin rotated slightly to the left. The muscles of the neck are in firm spasm. There are no signs of paralysis or sensory changes in trunk or limbs. He breathes normally. Some slight difficulty is experienced in swallowing. No projection can be seen or felt in the pharynx.

He was sent to the X-ray department, and the accompanying skiagram (Fig. 1) was obtained. It shows a well-marked displacement forwards, to the extent of about an inch, of the head and atlas on the axis. Whether the odontoid has been broken through or the transverse ligament ruptured cannot be made out.

Under chloroform an effort was made to reduce the displacement, but this failed, although very considerable force was employed.

The patient was returned to bed, and his head kept flat on the mattress between sand bags.

On 30th July he was fitted with a poroplastic collar and allowed to sit up.

On 10th August he was discharged, with instructions to wear the collar for six weeks.

When examined on 27th September the collar was removed, and it was found that all pain had disappeared. Very considerable stiffness, however, remained, particularly in regard to lateral movement to the right.

Dislocation at this situation, with marked displacement, is supposed to be almost inevitably and immediately fatal. This

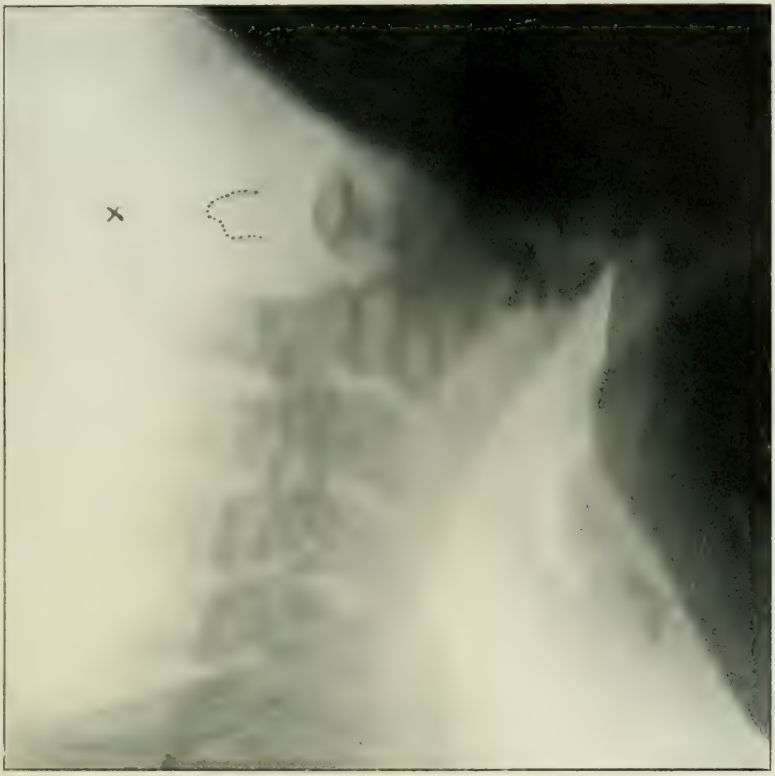

FIG. 1.—Radiogram of Mr. J. M. Cotterill's case of cervical dislocation. The dotted line opposite **X** represents the position of the posterior tubercle of the atlas in a normal subject photographed in the same attitude of acute flexion of the neck.

PLATE I.

Illustrating Mr. Cathcart's paper.

case, accordingly, appears to be worthy of record. The very considerable forward displacement of the spinous process of the atlas on that of the axis seems inconsistent with the diagnosis of an isolated displacement of the articular process, though in some respects the symptoms suggested that explanation of the case.

CASE OF INTESTINAL OBSTRUCTION FROM CARCINOMA OF DESCENDING COLON IN A MAN AGED 22 SUFFERING FROM ACHONDROPLASIA—FORMATION OF ARTIFICIAL ANUS; SUBSEQUENT RESECTION OF AFFECTED BOWEL, AND REUNION OF THE BOWEL—RECOVERY.

By C. W. CATHCART, F.R.C.S.,
Surgeon, The Royal Infirmary.

G. A. R., aged 22, was admitted to Ward 18 on 12th June 1909, suffering from acute intestinal obstruction of six days' duration. The abdomen was much distended, and the bulgings from numerous distended coils of intestine were recognisable on the surface, with distinct peristalsis.

The patient was a dwarf, with the characters of achondroplasia well shown (Plate I.). He had had obstinate constipation for some months, but recently there had been complete obstruction. As the symptoms were urgent, the patient was taken into the operating theatre at once.

First Operation, 12th June.—Under chloroform, Mr. Cathcart opened the abdomen through the linea alba below the umbilicus. The cæcum was distended, and the seat of obstruction was found to be in the lower end of the descending colon.

A second incision was then made along the outer border of the left rectus, and the affected portion of the descending colon was drawn through the wound.

As the lower portion of the small intestine was greatly distended, one of the coils was brought forward at the central wound, and a Keith's drainage tube was temporarily tied into it. A large quantity of gas and fæces having been evacuated, the tube was withdrawn and the aperture sewn up transversely. The central wound was then closed, and the operation completed by tying a Paul's intestinal tube into the descending colon immediately above the obstruction.

The patient made a good recovery, although the healing of the central wound was delayed owing to suppuration.

Second Operation—14th July.—Under chloroform the wound on the left side was enlarged upwards and downwards, and about 8 inches of

bowel bearing the carcinoma and artificial anus were resected. The ends of the bowel were closed, and the lumen re-established by lateral anastomosis, the sigmoid flexure being drawn up from below. Light gauze packing was laid over the seat of suture, and the wound was closed, except at the place where the gauze came through.

On the 16th flatus was passed per anum.

On the 18th the bowels were somewhat distended and the patient uncomfortable, but a dose of castor oil was given, and brought on a satisfactory evacuation of gas and fluid fæces per anum.

Further progress was satisfactory. The patient was photographed on the 18th of August and discharged next day.

Remarks.—It is rare to find a case of cancer in so young a person, and it may be of interest to note that the form of cancer was not different from that which is usually found in elderly persons in the same region, *i.e.* a firm contracted ring of new growth. Since, however, the disease is occasionally met with in persons as young as this one but otherwise apparently normal, there seems to be no reason to associate the early development of the cancer in this case with the condition of achondroplasia.

In cases such as this the patient's chances of recovery seem to me to be much enhanced by having the operation performed in two stages. The operation of drainage of the bowel is shorter than that of excision, the shock is less, the evacuation of the overloaded bowel is simpler and easier than through the natural passages, if re-established, while we do not put a strain on recently stitched intestine if we wait till the bowel is empty.

Where it is possible to overlap the ends of the bowel sufficiently, a lateral anastomosis is generally preferred to an end-to-end union, especially in the great intestine, for several reasons, *i.e.* the aperture can be made as large as need be and of equal size in both ends, while the outer layer of stitching is carried through a surface covered by peritoneum all round.

Although I have operated on several cases of cancer in the sigmoid flexure, in which the bowel has been successfully united end to end, I think the lateral anastomosis method is preferable.

As in the great intestine there is a considerable risk of leakage in the stitching coming on a few days after the operation, I always place a light packing round the site of suture, and leave the ends out. This remains for three or four days, when a drainage tube is substituted for it. An escape of fæcal matter for a variable time has been frequent, but the fistula has never failed to heal by granulation.

FRACTURE OF THE SPINE, WITH HÆMORRHAGE INTO THE CAUDA EQUINA, CAUSING PARALYSIS—RECOVERY.

By DAVID WALLACE, C.M.G., F.R.C.S.,
Surgeon, The Royal Infirmary.

A YOUNG man, aged 22 years, was admitted into Ward 6 on 5th December 1908, suffering from an injury to his back caused by a fall from a height of 25 feet an hour or two previously. He was in a state of profound shock, and was paralysed from the hips downwards. The right lower limb was wholly paralysed, both as regards sensation and motion, but the left could be slightly moved voluntarily, and anæsthesia was not complete. A marked prominence was found at the level of the 1st and 2nd lumbar vertebræ, and in addition there were slight injuries to the head and a right Colles's fracture. There was retention of urine, and catheterisation was needed.

6th December.—Motor power completely lost in left leg, but some sensation present. The right leg can be slightly moved, but anæsthesia complete.

8th December.—Retention continued, and pus present in the urine.

20th December.—Retention continued, and now incontinence of fæces. A left pleurisy has developed. Wasting of both legs and weakness of all movements is observable. Tactile anæsthesia, corresponding to the distribution of the 5th lumbar to 5th sacral roots inclusive, is revealed in the right limb, but sensation of left limb is unimpaired.

Dr. Edwin Bramwell reported on this date that "the diagnosis lay between injury to the cauda equina, an associated lesion of the conus, hæmorrhage into the cord, or both."

13th January 1909.—Patient admitted into the Longmore Hospital, and on this date he micturated voluntarily, and no longer had incontinence of fæces. The legs were both markedly atrophied, but all movements were possible, and the sensory loss in the right leg was disappearing.

20th January.—Dr. Bramwell now reported that "the rapid improvement in the power of the legs and of the sphincter trouble make it practically certain that the effects of the injury have been limited to the cauda. The symptoms must have been due, for the same reason, to pressure from hæmorrhage, or exudation, or to bruising, and I believe that in time there should be almost complete recovery." This opinion proved to be correct, as in July the patient could walk well about the ward in a go-cart, and was dismissed on 11th September 1909, able to walk about quite freely with the aid of a stick.

This patient illustrates the power of recovery in such injuries, and the importance of giving a guarded prognosis until sufficient time has elapsed to enable one to judge of the nature and degree of the injury to the contents of the spinal canal.

TWO CASES OF MENINGITIS COMPLICATING CHRONIC MIDDLE EAR SUPPURATION, WITH RECOVERY.

By A. LOGAN TURNER, M.D., F.R.C.S.E., F.R.S.E.,
Surgeon to the Ear and Throat Department, The Royal Infirmary.

Case I.—Serous Meningitis, Complicating an Acute Exacerbation of Chronic Middle Ear Suppuration—Exploration of the Cerebellum—Recovery.

A. T., a schoolboy, æt. 13, was admitted to the Ear and Throat Department of the Royal Infirmary on 24th June 1909, on the recommendation of Dr. Robert Stewart. The left ear had discharged for eighteen months. He had had measles at the age of four, but his father felt certain that there had been no ear discharge at that time. He had always enjoyed good health until five days before his admission, when he returned from school complaining of severe headache. On the following day he vomited; his temperature rose to 103° F., and he complained of great pain in the left ear. Towards evening he became drowsy. There was no history of shivering or rigor. As the temperature remained elevated and the boy continued to be dull, he was sent into hospital.

On admission the temperature was 100·6° F., pulse 84, respirations 26. The child lay on his back with the lower limbs extended; he did not look ill, and he answered questions readily. He complained of frontal and occipital headache.

The Ears.—Right tympanic membrane not perforated but showing two chalk patches; hearing good. Left ear: sour smelling discharge in the meatus; deep posterior meatal wall red; small perforation in posterior superior quadrant; considerable mastoid tenderness but no œdema; enlarged and slightly tender glands below the left ear. Watch 12/50. Whisper at 3 feet. The low tuning-fork not heard by air or bone conduction, medium fork with bone conduction lengthened. The high forks heard better by air than by bone conduction. Slight spontaneous nystagmus was observed on deviating the eyes to the left, although a little later this phenomenon was absent; no spontaneous nystagmus on looking to the right or sound side. After syringing the left ear with cold water for 65″, no nystagmus was produced on looking to the opposite side; after syringing with water at 118° F. nystagmus was produced on looking to the same side for 80″. Severe giddiness followed syringing.

The Eyes.—The pupils were equal, moderately contracted, and reacting to light and accommodation. No ocular paralysis. The discs were normal.

The Nervous System.—No facial paralysis and no paralysis of the upper and lower limbs. The hand grips and movements of forearms equal on the two sides. He complained of pain when the muscles of the back of the neck were palpated and when the head was bent forwards, but there was no head retraction. Tapping over the left side of the skull produced pain. Abdominal reflexes present and equal on the two sides; knee jerks active and equal; no ankle clonus; plantar flexion; no Kernig's sign. He could name objects and read easily. He felt giddy on sitting up. The examination tended to tire him.

Operation.—The mastoid operation was carried out on the evening of

admission, but on account of the limited extent of the disease the radical operation was not performed. The mastoid process was acutely inflamed, the bone being very vascular and soft and easily removed with the sharp spoon, but no pus was found; the wall of the sigmoid sinus was healthy; the antrum contained some mucoid secretion.

The cerebro-spinal fluid was not under tension and was clear.

On the following morning, 25th June, the temperature was 98° F., and the pulse 100. The patient was distinctly drowsy. There was rigidity of the muscles of the neck, and a well-marked Kernig sign was present on both sides. Nystagmus to the affected side (left) was more active than on the previous day, but was not present on deviating the eyes to the opposite normal side (right). In the afternoon the temperature rose to 99·6° F.

26th June.—The patient is brighter and can read, write his name, and write to dictation. The nystagmus has disappeared. The temperature has fallen to 96·6° F., pulse 70; he has not vomited since his admission. Kernig's sign and cervical rigidity still present; the discs normal. Cerebro-spinal fluid was again withdrawn and was now found to be under considerable pressure; it was not turbid, and contained no increase of cells and no organisms. The diagnosis of serous meningitis was made.

27th June.—Temperature normal, pulse 76, respirations 24. No headache or vomiting. Leucocytosis 7400, polymorphonuclears 80 per cent., lymphocytes 18 per cent. On the evening of the same day the temperature fell to 97° and the pulse was 57.

28th June.—During the night of the 28th the pulse remained between 56 and 58 and the temperature at 97·4° F., and on the morning of the 29th the same observations were made. The boy had become somewhat drowsy again and the nystagmus to the affected side had reappeared. Kernig's sign was still present. The leucocytes had risen to 8000. Notwithstanding the absence of headache and vomiting, it was decided to explore the cerebellum, as the subnormal temperature and pulse, the drowsiness and increasing leucocytosis suggested abscess formation. The nystagmus to the affected side favoured the exploration of the cerebellum.

The operation was carried out behind the sigmoid sinus, so as to avoid any contamination from the mastoid wound. The left lateral lobe was searched in a forward and inward direction, but no pus was found. The dura mater was stitched and the scalp wound closed.

30th June.—The patient felt better, temperature was normal, and the pulse 88. The nystagmus had disappeared and Kernig's sign was not so well marked. The improvement was maintained, the pulse continued normal, and on 6th July Kernig's sign had completely disappeared. The cerebellar wound healed without suppuration and convalescence was rapid. When the patient was seen in October 1909 the left ear was dry, and his general health was good.

Case II. — Acute Purulent Lepto-Meningitis, Complicating Chronic Middle Ear Suppuration; Removal of the Primary Focus, Repeated Lumbar Puncture, and Injection of Antistreptococcic Serum—Recovery.

W. L., a lad, æt. 16, working as a French polisher, was admitted into the Ear and Throat Department of the Royal Infirmary on 9th November 1909,

on the recommendation of Dr. Watt of Falkirk. It was difficult to obtain a detailed account of his illness. His left ear had discharged for a number of years, but had not caused him any other inconvenience. He had enjoyed very fair health until one week before his admission, when severe vomiting commenced. On the following day he attempted to work, but vomiting again occurred, accompanied with giddiness. He was obliged to remain in bed, and did not leave it until he was removed to the infirmary. During the week his temperature was elevated, and he suffered from headache, but there was no further vomiting; he tended to become a little drowsy. There was no history of any rigor.

On admission on the afternoon of 9th November the temperature was 100° F., pulse 68, and respirations 18. The boy lay on his back with his lower limbs extended; his appearance conveyed the impression that he was suffering from more than mastoid suppuration. He answered all questions put to him quite readily. His tongue was furred, and his bowels were somewhat constipated. He complained of very slight frontal headache.

The Ears.—Right tympanic membrane retracted; no evidence of past suppuration; hearing good.

Left ear: fœtid discharge and a polypus filling the meatus; a considerable degree of deafness; the tuning-fork heard better by bone than by air conduction. The caloric vestibular tests were not carried out on account of the presence of the polypus.

A few momentary jerky nystagmic movements were observed on deviating the eyes to the affected side (left); there was no spontaneous nystagmus to the opposite healthy side. Pressure upon the mastoid process elicited tenderness, but there was no œdema. He complained of tenderness along the course of the left internal jugular vein.

The Eyes.—The pupils were equal and moderately dilated; they re-acted to light and accommodation: there was no photophobia, and no ocular paralysis. There was no optic neuritis, but the veins on both sides were dilated.

The Nervous System.—No facial paralysis; no motor paralysis elsewhere. The hand grips on the two sides were equal (the boy was right-handed). Co-ordination movements were good. A slight rigidity of the neck was present. The abdominal reflexes were normal and equal on the two sides. There was plantar flexion on both sides; the knee jerks were normal and equal, and there was no ankle clonus; Kernig's sign was not present. He could name objects shown to him, and he could read.

The Operation.—The radical mastoid operation was performed shortly after the patient's admission. No pus was found in the mastoid process, the bone being devoid of definite cell spaces. The antrum contained mucopus and a small quantity of cholesteatoma, which was also found in the aditus and attic. The roof of the antrum was carious, but on removal of the diseased bone the dura mater was found to be of normal appearance. The polypus was attached to the inner wall of the tympanum. The malleus was attached to the remains of the tympanic membrane; there was no incus. The outer wall of the labyrinth showed no evidence of disease. The sigmoid sinus was not exposed.

The Cerebro-Spinal Fluid.—On lumbar puncture the cerebro-spinal fluid escaped under considerable pressure and was slightly turbid. Examination of the fluid revealed the presence of a quantity of albumin, and in the clot,

after centrifuging, 40 per cent. of polymorphonuclear cells, and 60 per cent. of lymphocytes, were found. No organisms were seen in direct films after prolonged staining, and no growth was obtained in broth even after one week. The following organisms were grown from the secretion taken from the antrum: the streptococcus pyogenes, B. proteus vulgaris and a gram + anærobe.

During the two days following the operation the patient was fairly well: the temperature remained elevated, reaching as high as 102° F., swinging a little but never coming down to normal. He complained of severe frontal headache, but did not vomit. Antistreptococcic serum was injected subcutaneously. On the fourth day, 13th November, he was examined in consultation with Dr. Edwin Bramwell. The following additional points were now observed: the neck rigidity had increased, the patient complaining of pain when the head was moved. The finer movements of the fingers could not be carried out quite so well with the left hand as with the right. The movements of pronation and supination (diodo-coccinesia) were less active on the left side than on the right. Slight nystagmic movements were elicited when the eyes were deviated both to the right and to the left, and there was a tendency for the eyes to swing back to the middle line. Kernig's sign was present on both sides. The temperature tended to remain higher.

The diagnosis of meningitis was now well established, as evidenced by the temperature and headache, the neck rigidity, the development of Kernig's sign, and the condition of the cerebro-spinal fluid. As the effects of the general anæsthetic upon the blood had probably now passed off, a blood count was made: the leucocytosis was 15,300; the polymorphonuclear cells 91 per cent. Ten cc. of antistreptococcic serum were again injected subcutaneously, on the assumption that the meningitis was due to the streptococcus pyogenes. The injection was repeated on the following day. A second lumbar puncture was now made; the fluid was under considerable pressure and turbid. It contained a quantity of albumin; polymorphonuclear cells 70 per cent.; lymphocytes 30 per cent. A distinct deposit of pus was obtained. After three days' cultivation the following organisms were found in the cerebro-spinal fluid:—the streptococcus pyogenes, the bacillus proteus vulgaris, and a gram + anærobic bacillus—the same organisms as those previously noted in the culture from the mastoid wound. In consequence of the knowledge thus gained, a third lumbar puncture was carried out (17th November), and 5 cc. of the antistreptococcic serum were injected into the spinal canal, and 5 cc. subcutaneously. On the following day (18th November) cerebro-spinal fluid, still under pressure, was again withdrawn, and 10 cc. of the serum were injected into the spinal canal.

Examination of the fluid withdrawn at this date (18th November) contained a trace of albumin, a few polymorphonuclear cells and some lymphocytes. No organisms were grown in culture.

During the period from 13th November to 20th November the patient's condition varied. He showed progressive emaciation; his pupils were considerably dilated; Kernig's sign was very distinctly marked on both sides. The temperature at first steadily fell, but again rose to 101·4° F. The pulse varied from 81 to 96 per minute. Leucocytosis was now 8600, polymorphonuclears 89 per cent. Headache had completely disappeared. On the 20th and 21st the serum was injected subcutaneously. On 22nd November well-marked nystagmus to the affected side (left) was elicited, and this phenomenon coupled with the weaker movements of the left arm led to a discussion as to

the propriety of exploring the left cerebellar lobe. As the nystagmus, however, disappeared in a few hours, the operation was not performed.

On 28th November distinct improvement in the patient's condition was observed; he looked better than he had previously done during his illness: he was free from headache, and the rigidity of the neck had disappeared. Kernig's sign was still present; the power of the left arm had improved, and there was no recurrence of the nystagmic movement to the affected side. Another subcutaneous injection of antistreptococcic serum was administered. On 29th November Kernig's sign and the weakness of the left arm had disappeared; the temperature remained consistently normal, and the patient was evidently putting on flesh. The mastoid cavity was clean. From December 1st the patient steadily improved, his convalescence being interrupted, however, for a few days by the development of a severe urticarial rash, which subsided under antirheumatic treatment.

Although cases of recovery from lepto-meningitis complicating middle ear suppuration are from time to time reported, their occurrence is not so frequent as to make the record of further successes superfluous. The two cases are also published to draw attention to the necessity of an earlier recognition of ear disease as a possible cause of general infection when a doubt exists in the mind of the medical attendant as to the true nature of the cause of the condition under observation. During the last three years twenty-one cases of meningitis complicating middle ear suppuration have come under the writer's care, either occurring as the only complication, or associated with sigmoid sinus thrombosis or brain abscess. Of these, one was a case of serous meningitis, with recovery (Case I.); the remainder were cases of purulent meningitis. All of the latter terminated fatally, with one exception (Case II.). As both have been described in such detail, it is unnecessary to comment further upon them.

Unless the patient is obviously moribund, surgical interference has been our routine practice. The primary focus of suppuration in the middle ear and mastoid is thoroughly removed, and if the inner ear is involved, it is dealt with in the same way. This treatment is combined with an attempt to drain the affected meninges. In all, repeated lumbar puncture has been carried out, and in one case a more continuous drainage was attempted for fifteen hours by leaving the lumbar puncture needle *in situ*. In another, the meningeal spaces were opened in the floor of the middle and posterior cranial fossæ. In two, wire drains were inserted through the internal auditory meatus after opening up the affected labyrinth. In one case the silver preparation electrargol was injected into the spinal canal as a bactericide. None of these cases, however, recovered.

Unfortunately, as a rule, the patients are admitted too late, and surgical interference is often a forlorn hope. I believe that our success in the two cases just detailed was mainly due to the fact that treatment was undertaken in a very early stage of the inflammation. In Case I.

early interference probably prevented the serous meningitis from becoming purulent, while in Case II. surgical interference cut short the suppurative process. When the latter was admitted to hospital the signs of meningitis were not advanced; headache was not pronounced; neck rigidity was only slightly marked, and Kernig's sign had not developed. Although the cerebro-spinal fluid was under pressure, faintly turbid and contained albumin with the cellular elements in considerable excess, no micro-organisms could be cultivated from it. At that stage the primary septic focus was thoroughly removed, lumbar puncture performed, and sub-cutaneous injections of antistreptococcic serum commenced as soon as the organisms from the mastoid cavity were recognised. Later, with the appearance of Kernig's sign and the growth of organisms in the cerebro-spinal fluid, injection of the serum into the spinal canal was carried out. In all probability the serum treatment assisted in bringing about the recovery of the patient. In Case I. exception might be taken to the exploration of the cerebellum; drowsiness and slowing of the pulse are clinical phenomena in serous meningitis, but the development of these signs along with a subnormal temperature, an increasing leucocytosis, and nystagmus to the affected side gave strong presumptive evidence of suppuration in the cerebellum. Although no pus was found, the immediate improvement which followed the operation was doubtless due to the temporary drainage of the meningeal spaces in the posterior cranial fossa.

I wish to thank Dr. Edwin Bramwell for his assistance in the clinical examinations, and to acknowledge my great indebtedness to Dr. F. E. Reynolds for the thorough way in which he carried out the bacteriological and microscopical work which was of so much service in the successful treatment of the cases.

A CASE OF FRACTURE THROUGH THE GLENOID FOSSA OF THE SCAPULA.

By J. W. STRUTHERS, F.R.C.S.,
Assistant-Surgeon, The Royal Infirmary.

FRACTURE through the glenoid fossa of the scapula appears to be so rare that the following case, which recently came under the writer's observation, is worth recording:—

Miss E. M., 21 years of age, came to the Royal Infirmary on 12th November 1909, complaining of pain and weakness in the right shoulder, the result of an accident she had met with four days previously. Her account of the accident was that while walking along the street with her arm hanging by her side she had tripped and fallen heavily to the ground, pitching directly on to her shoulder. After the fall her shoulder was very painful, and she was quite unable to move it. Four days later, although the pain had diminished, she

was still unable to move her arm at the shoulder, and came to the Infirmary for advice.

On examining the shoulder there was a notable absence of swelling and ecchymosis. At first sight there appeared to be no deformity, but a careful comparison of the two shoulders showed that there was a very slight flattening of the deltoid on the injured side, as if the head of the humerus was for some reason a little less prominent than on the sound side. The most striking feature of the case was the complete loss of power of voluntary movement at the shoulder joint. This loss of power was apparently not due to muscular paralysis, for when the patient attempted to move the humerus the shoulder muscles could be felt to contract. The pain caused by the attempts at movement did not seem sufficient to account for the weakness, for passive movement could be carried out in every direction without causing much discomfort. No alteration in the relative positions of the bony points at the shoulder could be made out, and no crepitus was felt at any time during the examination of the patient.

In the hope that some light might be thrown on the case, an X-ray photograph of the shoulder was taken, with the interesting result that a fracture of the glenoid fossa was clearly shown (Fig. 2).

The head of the humerus had evidently been driven firmly against the glenoid by the fall, and had detached the greater part of the fossa with part of the axillary border of the scapula. The upper part of the fossa was unbroken, and the head of the humerus had not fallen, being presumably held up by the upper part of the joint capsule, the long tendon of the biceps muscle, and the supraspinatus muscle. The patient's difficulty in moving the humerus was clearly explained by the defect in the joint produced by the fracture.

In view of this disclosure the shoulder was carefully re-examined, but no further sign or symptom was discovered which might have led to the recognition of the true nature of the case in the first instance. In particular, no crepitus could be elicited by manipulating the humerus and scapula from the shoulder or axilla.

The treatment adopted consisted in the daily application of massage to the shoulder and free passive movement of the joint. For a few days the patient was allowed to carry the arm in a sling, owing to the pain and feeling of weakness which she felt. The sling was, however, soon discarded, and the patient encouraged to use her arm freely. This she rapidly learned to do, and three weeks after her accident she could swing her arm to the vertical above her head and hold it there, although unable to lift and lower it slowly. She returned to her work as a shop assistant at this time. Seven weeks after her accident she could lift and lower her arm slowly without limitation of the range of movement, although not quite so strongly as on the sound side. She was quite able for her work, and felt no discomfort or serious weakness in her shoulder.

The occurrence of such a fracture is recognised in the text-books, but records of actual cases are very rare. The only case known to the writer, in which the clinical features and morbid anatomy were definitely ascertained, is that recorded by the late Professor Spence.[1]

[1] Spence, *Lectures on Surgery*, vol. i. p. 369

In describing the clinical features of the case he said, "there was great projection of the acromion, flattening of the deltoid, and all the symptoms of luxation of the shoulder to an extreme degree. The contour of the shoulder was easily restored, crepitus being elicited in doing so, but the deformity returned when the support was removed from the arm." The clinical features were, in short, those described by Astley Cooper and others as occurring in cases of fracture through the neck of the scapula, and the case is actually figured and described as one through the neck of the scapula by Stimson.[1]

Spence's patient died within a few days of his accident, and the post-mortem examination revealed a fracture detaching the major part of the glenoid cavity and the axillary border of the scapula to a quarter of an inch beyond the origin of the scapular head of the triceps muscle. The long head of the biceps and the whole of the glenoid ligament were also torn off. The specimen is in the Spence collection in the Surgical Department of the University of Edinburgh, and the writer is indebted to Professor Alexis Thomson for an opportunity of examining it. The line of fracture corresponds very closely with that shown in the X-ray photograph of the writer's case. The difference in the clinical features in the two cases is apparently accounted for by the fact that the structures supporting the head of the humerus were more extensively torn in the case recorded by Spence than in the writer's case.

Thanks to the information given by the X-rays in the present case, it is clear that fracture through the glenoid fossa may be present without any signs of dislocation at the shoulder, and may cause only a trifling deformity with temporary loss of power of voluntary movement at the shoulder joint.

Routine examination, by the X-rays, of injuries diagnosed as contusions of the shoulder might possibly show that fracture of the glenoid fossa is commoner than is usually supposed.

[1] Stimson, *Treatise on Fractures and Dislocations*, 3rd edit. p. 311.

OBITUARY.

GEORGE SKENE KEITH, M.D., F.R.C.P., LL.D.

George Keith died at his residence, Moidart Cottage, Currie, on 12th January 1910, in his 91st year.

To most of the younger and middle-aged of the profession his name will not convey much, and indeed many thought that he had already joined the majority. All his old friends are dead. Even Sir Henry Littlejohn felt out of touch with him owing to the lapse of years. But in many aspects he was a great man, and a notice of him may recall some of the salient points in a great character. He was born in 1819 at the manse of St. Cyrus, and had a good heredity. His father was also a remarkable man—stern, self-reliant, the author of a strong work, now mostly forgotten, upon the evidences of Christianity.

George, after an education at the village school, went on to Aberdeen and eventually to Edinburgh, where he was Gold Medallist in Professor Simpson's class, and was one of that famous party that inhaled chloroform round Professor Simpson's table and showed the world its capabilities. Of that famous party he was the last medical survivor. One lady still lives. Simpson formed a high opinion of his talents, and for a time they worked together. Keith then settled in Edinburgh, and soon built up a very large practice. His patients swore by him, and those who were not his patients swore at him and abused him—the whole principles of his practice differed so much from the routine work of his age. Most doctors gave plenty of medicine and also plenty of sustaining food. Warm rooms and no open windows in sickness were really the fashion. Keith gave very little medicine and less food, plenty of fresh air and plenty of hot water. The overloaded stomach soon benefited by the change, and Keith's patients knew their mercies. Of course he may have occasionally overdone it and ridden his hobby too far, but the main points were all of progress. A kind-hearted, clever doctor called Keith in consultation; he was giving his patient very little food—only beef-tea and soup. However, Keith would have none of them. Fulth—fulth in his broadest Doric—and hot water it had to be. His brother Thomas, the ovariotomist, most beautiful of delicate men, was his coadjutor, and between them their practice was enormous. Thomas, after a lifetime of suffering, excitement, specula tion, and worry, died a comparatively young man. George gradually got out of practice by his own desire, migrated to Moidart, saw his old patients when required, and carried on many cases by correspondence. His active brain began to write books, and his *Plea for a Simpler Life*

and *Fads of an Old Physician* have been most successful and useful to many.

His life was a many-sided one, full of variety and exercise of all kinds. In his early middle age he shared a yacht with one of his patients. The writer of this notice had many a nice cruise as a boy in the *Chameleon* in the Firth of Forth. He was a great traveller in the Holy Land, many parts of Europe, and when quite an old man he travelled to Burmah. A long, gaunt, half-starved looking man, he did not magnify by his own looks the perils of his practice. He had awful headaches at times, but still he lived in much comfort and good health till he was 91.

A powerful, just, and determined man, absolutely true and honest, he lived the life of an ancient philosopher in degenerate days.

J. B.

MEETINGS OF SOCIETIES.

Edinburgh Medico-Chirurgical Society.

A MEETING was held on 5th January, Dr. Byrom Bramwell, President, in the chair.

Dr. C. W. MacGillivray opened a discussion on syphilis and marriage. He referred to the importance of the question in view of the facts that the disease was not merely infectious, but was transmissible to the offspring, and was a common cause of abortion and of degeneration of the race. The public was very ignorant regarding venereal disease, and it was left entirely to the medical man to cure the disease, to prevent contagion, and prevent transmission. The task was both difficult and thankless. The question when it was safe for a syphilitic to marry was a difficult one. His own view was that four years from the chancre was a sufficient interval if the treatment had been efficient, and there had been no further symptoms. A question must be treated as a sanitary, and not as a sentimental, one. The subject of malignant syphilis was unsuitable for marriage at any time, but the problem was usually forestalled by death. Tertiary syphilitics should be advised not to marry. A large number of interesting cases were quoted.

Dr. Clouston said that congenital syphilis might show itself as a form of epileptic idiocy and defective development. General paralysis was also syphilitic. In general paralysis of adults there was precedent syphilis in the great majority of cases, but a causal relationship was not established. It was the routine treatment to give antisyphilitic remedies in general paralysis, but the small number of cases which recovered were most probably brain syphilis.

Dr. Haultain said that, as regards paternal syphilis, he was sceptical about the truth of Colles' law. Many women married to syphilitic men aborted regularly, but the women were not syphilitic, and were not immune. After a woman had a series of abortions, and was then treated, the fœtus might live. The benefit of the mercury was wrought on the fœtus through the placental circulation, and not on the mother. He cited cases where women with syphilitic husbands had several abortions, and after remarriage to healthy men had healthy children, and quoted one case where a woman with a syphilitic husband had a series of abortions, and after re-marriage to a second syphilitic got a chancre on the cervix.

Professor Caird deplored the absence of statistics in this country, but believed that the greater efficiency of modern treatment had done a very great deal to save many lives.

Dr. Cranston Low quoted the experiments of Metchnikoff and Roux,

which showed that vigorous treatment cured the disease, and made early re-infection possible. The Wassermann reaction should be tried when old syphilis was alleged or suspected.

Dr. Allan Jamieson said that a difficulty arose in the treatment of syphilis, since as soon as symptoms disappeared, the patient suspected whether advice to prolong treatment was disinterested.

Mr. Hodsdon quoted a case in which, after very thorough treatment, a second infection occurred two years after the first.

Mr. Miles said that the advice to delay marriage for more than two years was a counsel of perfection. He doubted whether tertiary syphilities need be advised not to marry. All humanity was liable to some fatal disease.

Dr. James Ritchie thought there should be two years' treatment, and one year without symptoms before marriage.

Drs. Lundie and Blaikie read a paper on the "Treatment of Phthisis and other Conditions by Injections of Arylarsonates." The drug chiefly used had been soamin. Doses of 10 grs. on two successive days were given at intervals of a fortnight. In one-third of the cases there was pain twelve hours after injection, and in one case blindness had resulted. In specific cases the benefit had been very great. In some tubercular cases there had been immediate and striking improvement.

Dr. Boyd made some remarks on metabolism under the influence of these bodies.

Dr. Berry discussed the nature of the optic lesion in blindness resulting from the use of such drugs.

Dr. W. G. Aitchison Robertson gave a lantern demonstration illustrating the advantages of cremation over earth burial.

Edinburgh Obstetrical Society.

THE second meeting of the session was held on Wednesday, 8th December 1909, Dr. F. W. N. Haultain, President, in the chair.

Dr. Haig Ferguson and Dr. Fordyce showed specimens.

Dr. J. W. Ballantyne read a paper entitled "The Rational Puerperium." He referred to Dr. Haultain's paper read before the Society in July, in which it had been claimed that recumbency after the third day and in an ordinary case was unnecessary, and that it was rational management to allow the puerperal woman to sit up in bed on the second day and to rise on the third day. The morbidity in 100 hospital cases so treated was 3 per cent.

The question of early rising had been much discussed on the Continent during the last ten years, but in Britain it had received little attention. Early rising, even on the day following labour, had been advocated as early as 1874-5 by Dr. William Goodell of Philadelphia,

who gave as reasons in its favour that labour was a physiological and not a pathological process, that the upright position excites uterine contractions and lessens the amount and duration of the lochia, the absence of uterine diseases among the nations whose women practise early rising, and his own experience that early rising made the convalescence after labour more prompt and sure. This position was adversely criticised in his own country by Garrigues (1880) and apparently found no support in Europe. The subject was actively revived by Küstner in Berlin (1899), who thought that for strong healthy puerperal patients who had come through a normal labour, and had neither been infected nor suffered larcerations, a rest in bed for several weeks was not only needless but actually harmful, and that they ought to rise on the third or fourth or even on the second day after delivery. In cases with lacerations, previous infection, or gonorrhœal discharge, and in operative and unusually tedious cases, however, the longer rest in bed was enjoined. In cases which rose early he claimed to find freedom from prolapse or retroversion, hastening of involution, greatly improved digestive functions, and absence of difficulty in micturition. Küstner's method met with a good deal of criticism and little support. Of late years, however, it has found numerous advocates, and excited animated controversy and literary activity. So far Dr. Ballantyne found most of the reports to have been favourable to the new departure, and they seemed to show that after normal labours there is no need for prolonged rest in the horizontal position.

Amongst results quoted were:—Karl Mayer: patients allowed up when they liked; 4 rose on the third day, 40 on the fourth, 100 on the fifth; morbidity lower by 10 per cent. than in patients under old rule. Von Alvensleben: of 100 cases 3 rose on the first day, 61 on the second, 19 on the third, 18 on the fourth; morbidity 10 per cent. as opposed to 17 per cent. in the general clinique. Opitz reported favourably, but found difficulty in preventing women leaving hospital too soon, and anticipated difficulty in private practice where the puerperal patient was under less constant observation. Krönig still further shortened the resting period, allowing some patients treated by scopolamine and morphine to get up 8 to 10 hours post-partum. His published results were good and show no cases of thrombosis or embolism. Simon allowed rising for increasing periods from the fourth day, insisted on wearing a binder, and instituted gymnastic exercises to strengthen the abdominal muscles. On the other hand, Gellhorn has adversely criticised the method, and found that patients discharged from hospital as in perfect condition had required weeks of rest and treatment for disturbances which had come on after their return home. The case of the women of Java had also been brought forward as an argument against the practice. These women, of exceptional physique, are compelled by an old law of

their country to get up immediately after confinement and walk about, although not to attend to their domestic duties, and amongst them embolism and prolapsus uteri were of frequent occurrence. Fromme recorded a death from thrombosis and embolism in a patient who got up for an hour on the second day.

Dr. Ballantyne then reviewed a modified method carried out by himself in the Edinburgh Royal Maternity during the autumn quarter of 1909. He was convinced that the horizontal position in the early days had distinct advantages, but believed that the advantages claimed for early rising, viz., the strengthening of the abdominal and pelvic muscles, the improved digestion and better appetite, improved regulation of the bowels, and more ready escape of the lochia, could be attained by other methods without the possible risks of early rising. The escape of the lochial discharges was encouraged when desired by elevation of the head of the bed on blocks, and by giving regularly a pill containing sulphate of quinine and ergot, sometimes with digitalis. An amplified system of early exercises in the lying position (*Liegegymnastik*) as advocated by Krönig was carried out. These were not forced on the patients, but were quite voluntary and were directed by the sisters or nurses. They consisted in turning movements of the body, drawing up the knees, movements of the arms, and breathing exercises. In most cases they were begun the first day after labour—in no case later than the fourth day—and lasted for 10 minutes the first day, 20 minutes the second, 30 on the third, which was never exceeded. The patients enjoyed them, and in most cases the tone of the abdominal muscles at time of leaving hospital was above the average. No marked effect on the action of the bowels was observed.

Accurate observations were made by the house-surgeons in the 122 cases treated, as regards effect on muscular tone, pulse-rate, blood-pressure, and general progress in convalescence. Patients who, from various circumstances, could not have been allowed to rise early, were able to engage in the exercises at an early period. The treatment was contra-indicated and was not practised in a number of patients, including cases of eclampsia, serious heart disease, sepsis before admission, influenza, albuminuria, pneumonia, craniotomy, &c. As regards the date of rising in these cases treated by exercises, 43 rose on the seventh day, 38 on the eighth day, 19 on the ninth day, 4 on the tenth day, 1 each on the sixth, eleventh, and twelfth day. There was a marked absence of the usual weakness and dizziness on rising.

Dr. Ballantyne arrived at the following *conclusions*:—

1. That it is permissible to reduce the period of rest after labour for the ordinary hospital patient to 8 or 9 days.

2. Systematised exercises in the horizontal posture during the early days helps to keep the muscles in good tone, saves the patient from ennui, and facilitates return to the normal after rising.

3. When these exercises are carried out it may be safe to allow rising on the seventh day.

4. In coming to any conclusion about the proper day of rising in the puerperium the effects on the various phenomena of the period—pulse-rate, blood-pressure, temperature, &c.—must be strictly scrutinised, and the result shows that rising even on the seventh or eighth day causes distinct rise in the pulse-rate and a fall of blood-pressure.

5. The necessity for earlier rising, with its possible risks, will disappear when its advantages are gained in other ways as by the methods advocated.

6. Normal cases must be clearly distinguished from morbid ones, and the treatment adapted to the circumstances. Many cases in which early rising is contra-indicated can engage safely in the *Liegegymnastik.*

7. In private practice some shortening of the lying-in period might be adopted, the strict maintenance of the dorsal posture not insisted upon, and the patient allowed to turn freely about in bed.

Dr. James Ritchie, in opening the discussion, said that although in many women maternity might be described as a physiological process, in very many, especially those of the better classes, the process was dangerously near the pathological, even in uncomplicated labours. Such patients were not good judges of the amount of liberty which they might take. Formerly, patients had been kept too long and too strictly at rest, and that to their disadvantage. The use of an abdominal binder was physiologically correct because it gave to the abdominal contents that support which the lax parietes could not afford under the suddenly changed conditions. Most women expressed themselves comforted after its application. The use of a pad was indefensible. If the uterus was not contracted and retracted the woman should not be left. For some years he had allowed patients to move freely from side to side immediately after confinement. If they could not use the bedpan they were allowed to sit in bed to empty the bladder. He allowed the patient an increased liberty in bed in proportion to the rate of involution of the uterus. He did not approve of routine douching of the vagina. Douches were necessary in special cases. For a cleansing douche he preferred sterilised water to antiseptics, because he believed that the latter diminished the natural protective power of the vaginal secretion. He thought that the principles advocated by Dr. Ballantyne were founded on a more scientific basis than those recommended by Dr. Haultain, whose paper he had read with much interest. Although he had no actual experience of the gymnastic movements he felt inclined to give them a trial in his private practice. Dr. Barbour said there could only be one opinion as to the importance of the paper, and of the subject with which it dealt. In the preceding quarter at the Maternity he had steered a middle course, letting patients rise about the fifth day, and had been well satisfied with the results.

Owing to the great interest of the subject full discussion was postponed until the next meeting of the Society.

Dr. B. P. Watson and Mr. H. Wade described and illustrated by lantern slides the Histological Changes Associated with an Early Abortion and the Anatomy of the Ovum. The specimen was obtained from a patient aged 24, who had borne two full-time children, of whom the first was alive and healthy and the second had died nine days after birth; then a series of abortions occurred at different stages in the first half of pregnancy. Each abortion was preceded by continued hæmorrhage. Antisyphilitic treatment had had no effect, but syphilis could not be rigorously excluded. Curettage also had been tried without avail. The menstrual losses were always profuse. The specimen consisted of a complete decidual cast of the uterus, containing *in situ* a pea-like ovum 1 cm. in diameter. Pregnancy had not advanced beyond the third week. On section the vessels of the decidua vera, serotina, and reflexa were found to be surrounded by a definite wall, composed of a fibrous tissue deposit and an endothelial proliferation, which reduced the size of the lumen. The changes were comparable with the sclerosis of uterine vessels occasionally found about the climacteric period. At one part thrombosis in a narrowed vessel had led to the necrosis of a lobule. The same pathological condition was found in the vessels of the resting mucosa, obtained from a previous curetting. The glands showed a degree of enlargement and proliferation. From the history and the changes in the resting mucous membrane and decidua, it was suggested as probable that the vascular change was causally related to the series of abortions. Whether it was primarily due to syphilis, or to a localised toxic absorption from the uterine mucous membrane, was left undecided. Serial sections, almost exactly transverse, of the embryo and its membranes were shown. They demonstrated with diagrammatic clearness the structure and relations of the early embryo. Dr. Barbour, Dr. J. W. Ballantyne and Dr. Young made remarks on the paper.

The third meeting of the session was held on 12th January, Dr. Haultain, President, in the chair.

The following specimens were shown by the President:—(*a*) Twisted pedicle subperitoneal fibromyoma of uterus with double fibromata of ovary. (*b*) Suppurating dermoid with intra-pelvic uterine fibromyoma. (*c*) Fœtus, showing achondroplasia, and median and probably lateral encephalocele.

Dr. J. W. Ballantyne showed (*a*) small uterus with fibroids removed for pressure symptoms. (*b*) Ectopic gestation of one side, with hæmatosalpinx of the other. (*c*) Copy of Mercurio's *La Commare*, alleged to be the first edition of 1601; also a copy of the 1642 edition. A point of interest was an illustration in this old work showing the

obstetric position now known as Walcher's position; also a copy of Raynalde's *Byrth of Mankynde*, edition of 1545.

The adjourned discussion on Dr. Ballantyne's communication on "The Rational Puerperium" was resumed.

Dr. Lackie referred to the risk of chill to the patient performing the exercises advocated by Dr. Ballantyne, and thought these exercises too limited to do any good. He considered massage preferable. He supported the plan of early rising which he had seen give such good results in Dr. Haultain's hands, and from which he had also obtained gratifying results in private practice.

Dr. Fred Porter made a plea for more thorough criticism before deciding definitely about the proper time for rising. He thought Dr. Ballantyne's charts showing blood-pressure, pulse-rate, &c., should be compared with similar observations in cases treated by the old method. He referred to the occurrence of embolism, phlebitis and prolapse, even in cases carefully treated by long rest in bed.

Dr. Armour thought the principle of not interfering with normal processes observed in our conduct of labour might with advantage be extended into the puerperium. If we could arrive from historical facts at a conclusion as to what women inclined to do of themselves before they became guided by medical men, he thought it would give us the normal period for women to "lie up." This would probably come nearer the "third-day" than the "eighth-day" method.

Dr. Oliphant Nicholson referred to the good results obtained in dispensary patients, who got up when they chose, and said he had found these results better than in private practice. This he attributed to the satisfactory drainage of the lochia that took place from the erect position. Whilst agreeing fully with the principle of early rising, he found in private practice that not one in ten or twenty wished to get up earlier than a week at least, and he did not see the need to change in private practice unless patients desired it.

Dr. Keppie Paterson said it was good to be shaken out of the ruts of custom in practice sometimes. He still believed thorough asepsis in midwifery an utter impossibility, and gave regularly a perchloride douche immediately after completion of labour, frequently flushing out the uterus at the same time. As to the puerperium, for some years he had allowed turning in bed and sitting up in bed to pass water the first day; encouraged sitting up in bed on the third or fourth day, and allowed of rising to have the bed made often as early as the fifth day. He had ventured on still earlier rising lately, but as yet did not feel quite justified in urging it generally.

Dr. Haig Ferguson expressed himself as quite satisfied with the existing method of treating the puerperium if carried out rationally and the patient not stagnated by disallowing movement. Free drainage for the lochia was the crux of the whole matter, and this was best

promoted by allowing of movements and sitting up in bed. He thought the present departure in favour of early rising a mistake, not because of immediate results which were much the same in both methods, but because of the remote results such as displacements, prolapse, cystocele. These were much more common amongst the poorer classes than in private practice, and he attributed their greater frequency mainly to getting up too soon. The patient's desire to rise early should not come into the matter at all, and the question should be decided entirely by the opinion of her medical attendant. Gymnastic exercises in bed would do less harm than early rising.

Dr. Haultain said the crux of the situation lay in the way we looked upon pregnancy, labour, and the puerperium; whether we regarded them as pathological or physiological. Unfortunately the teaching in the past had taught us to regard these processes as pathological. If physiological, as he believed, why should we condemn a woman to 14 to 21 days in bed? In his experience he had not found women to desire the long rest; on the contrary they were only too keen to rise. Whilst he certainly did not defer entirely to the patient's wishes in the matter, he had been in the habit of asking them on the third or fourth day if they wished to get up, and allowing them to do so if they chose. He now went further and urged those to get up who did not wish to do so.

In 25 private cases occurring since he read his paper 20 got up on the third day; all did well, and those who had had previous confinements expressed an unusual feeling of well-being and regret that they had rested so long on previous occasions. Of the others, 2, relations of doctors, refused to rise. Two were severe complicated labours. One had a fœtus weighing 11 lbs., and in consideration of the unduly stretched ligaments and weakened pelvic floor he decided not to let her up. It was interesting to note that now after three weeks in bed she had a prolapse. He could not agree at all with Dr. Haig Ferguson's opinion that prolapse, &c., were more common in hospital than in private patients, but thought that impression was gained because one saw so many more of the former class in one's work. He had had no case of phlebitis or thrombosis since he started early rising, and he thought the stimulation given to the circulation probably even prevented their occurrence. He thought the performance of exercises in bed not so good as early rising, as, in the recumbent posture, they would tend to force the uterus backwards. He recognised that it was difficult for medical men to carry out early rising in private practice at the present time, because any bad results whatever would be put down to it, but personally, he was so convinced of its rightness that he was determined to go on with it.

Dr. Ballantyne, in replying to the criticism, referred to the difficulty of getting a nurse to massage every case. When he came on duty at

the hospital he found two cases of phlebitis in patients who rose about the fifth day. He strongly deprecated the discussion being regarded as in any sense a duel between himself and Dr. Haultain, as both were attacking what was hitherto the customary mode of treatment during the puerperium: and if his own paper had preceded that of Dr. Haultain instead of following it, the views expressed by him might have been regarded as radical and those of Dr. Haultain as conservative. Whilst the puerperium was not pathological it was still a period of stress and strain following the stress and strain of labour. In private practice one felt some diffidence in attacking an old-established custom, but he thought this would be less if the change were less radical as in the method he advocated than it would be if we jumped still further at once to that of very early rising.

Dr. Hugh S. Davidson read a communication on "Ovarian Epilepsy," with a report of two cases successfully treated by operation, which appears on page 125.

RECENT LITERATURE.

CRITICAL SUMMARIES AND ABSTRACTS.

MEDICINE.

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Percussion of the Thorax.

It might well be doubted whether anything new remains to be said about so well established a method of clinical investigation as percussion, yet recently a good many papers dealing with the subject have appeared, especially from the pen of Professor Goldscheider, and as his teaching differs to some extent from that in the current text-books of physical diagnosis, and is, moreover, supported by some interesting experiments which can easily be repeated without special apparatus, it is perhaps worth while giving an abstract of them, despite the rather commonplace nature of his subject.

Goldscheider's main contentions are:—(1) Percussion should always be gentle: the only circumstance in which forcible percussion is required in the early stage of a physical examination is when the patient is obese. (2) The direction in which the percussing blow is given should be sagittal to the body, not necessarily at right angles to its surface. (3) The vibrations caused by percussion travel in the main along the axis of the percussing stroke, and do not spread laterally to any extent. (4) By light percussion it is possible to delimit the deepest solid organs, and the text-book axiom "percuss strongly for deep organs, lightly for superficial ones," is erroneous. (5) Percussion should always be performed over interspaces. Goldscheider's papers refer exclusively to percussion of the thorax, and he does not concern himself with any alteration in the percussion note except dulness. As his theory of percussion is somewhat elaborate, it is necessary to deal with some of his points in detail.

1. *Percussion Ought to be Light.*—According to Goldscheider, the right way to percuss is to use only the fingers, and to strike so light a blow as just to be perceptible to the ear. He admits that to get the best results extreme quiet must be observed, and for this reason advocates the examination of patients in a room apart. To percussion which just gives an audible note he gives the rather untranslatable name "*schwellenwertspercussion*," literally "threshold-value percussion," a term borrowed from the vocabulary of psychology, and meaning

percussion which just passes the threshold of consciousness. For the sake of brevity it will be spoken of as "minimal percussion." Now it is usually stated that, even with heavy percussion, solid objects lying more than 6 cm. ($2\frac{1}{2}$ ins.) below the surface of the thorax cannot be detected with certainty. This Goldscheider entirely denies (on experimental grounds which will be referred to later), and asserts that even the very lightest percussion causes vibrations to penetrate much more deeply. In fact, he practically reverses the axiom "light percussion for superficial structure; heavy for deep ones," stating that the smaller and more deeply seated a solid mass in the lung is, the lighter should percussion be in order to detect it. The reason for this apparent anomaly is that the percussion vibrations travel axially to the direction of the blow, and do not radiate as a spreading cone unless percussion is strong. Hence it follows that a deep-seated small mass will be easily detected by the damping of the narrow pencil of waves travelling axially, whereas with more forcible percussion the laterally spreading waves in the air-containing lung will obscure the slight dulness. The larger and more superficial a solid mass is, the stronger *may* percussion be, because the lateral vibrations also are absorbed. Deep percussion *must* be gentle, superficial percussion had best be so also, but *may* be strong without causing such gross errors as forcible deep percussion. Forcible percussion, therefore, is only required by two conditions—first, obesity, referred to above; and second, if a very large area of dulness exists, the full intensity of which can only be estimated by noting how it behaves when forcibly percussed over. Pathological dull areas in the thorax can be arranged in a series beginning from the smallest and ending in the largest: all are recognisable by minimal percussion, but as the force of the blow increases so do they disappear, beginning with the smallest, until, under very heavy percussion, only the largest are detected.

2. *Sagittal Direction of Percussion.*—This follows from Goldscheider's view that the vibrations in the lung produced by percussion travel axially. The rule applies principally to percussion outside the mammary line, especially in delimiting the left border of the heart. Granting that waves travel axially, and that solid organs damp them, it is apparent that it will not be possible to map out the left cardiac border by percussing at right angles to the antero-lateral wall of the thorax, because the vibrations will travel in towards the centre of the thorax and be damped by any part of the heart against which they happen to impinge, whether it be the left border of the heart in the clinical sense, or some other part of the ventricular wall. On the other hand, if the sagittal direction of the strokes be maintained, the left border will be mapped out as by the orthodiagraph.

A number of experiments in support of this theory are described, and some of them can be verified without any special apparatus. They

seem to show (*a*) that the vibrations of minimal percussion penetrate deeply into the lung, and (*b*) that their direction is axial.

3. *Penetration of Percussion Waves.*—Percussion over an interspace so light as to be inaudible to the percusser ("submininal percussion") can be distinctly heard on the other side of the chest by the stethoscope by another observer. Part of the sound, no doubt, is conducted along the chest walls, but not all, as the following experiments show:—(1) With submininal percussion anteriorly, and auscultation posteriorly just below the level of the lung, nothing is heard until the patient takes a deep inspiration so as to bring air-containing lung under the stethoscope. (2) If an attempt is made to delimit the heart by submininal percussion, an observer with a stethoscope on the back of the chest can detect a damping down of the sound as the border of the heart is overstepped. The solid heart blocks the transmission of the waves.

That the main conduction of the sound waves of minimal and submininal percussion is through the lung was proved by making windows in the thorax of a cadaver, and distending the lungs with air. Percussion was as well heard when the lung was auscultated directly through a window, as when the stethoscope was applied to the thoracic wall. It was still better heard when both percussion and auscultation were performed through the windows. This could not have been the case had the sound been transmitted by the ribs. By percussing the lungs of men and animals after removal from the chest, it was found that submininal percussion could be heard by the stethoscope at distances up to 35 cm. from the site percussed.

4. *Direction of Percussion.*—Sound is, of course, propagated most clearly in the direction of the movements which produce it; thus we hear a speaker best when his mouth is turned towards us. That vibrations produced by percussion travel axially to the percussion stroke can be proved by a few simple experiments. If we take a tall reagent glass (a urine glass serves perfectly well) and compare the effect of percussion on the bottom and on the sides we shall find (*a*) that when the mouth of the glass is uncovered the note produced by percussion on the bottom is much louder than that produced by percussion on the side. (*b*) When the mouth is closed, the two notes approximate to one another. (*c*) When percussion is made on the side in an oblique direction towards the mouth the note is louder than when it is made at right angles. If one places the glass on a table and percusses with a hammer on the finger held about 2 inches above the level of the mouth of the glass, it will be found that when the finger is over the glass, and the direction of percussion vertical, the note is resonant, whereas when the finger is outside the margin of the glass the note is dull. But with the finger in this position, if the direction of the percussion stroke is altered so as to point obliquely towards the glass, a slightly resonant note is again produced.

5. *Minimal Percussion.*—Goldscheider also describes some experiments on minimal percussion made with the aid of a spherical glass bottle. When the mouth of the bottle is open, the sound produced by percussion varies according to the site percussed and the direction of the stroke. Percussion at the pole opposite the opening produces a musical note: percussion at the equator a dull sound: percussion between equator and pole, directed towards the opening, a partially musical note. It is further found that when the opening is closed, the note is damped down. It will be a surprise to many to learn that a solid object can be percussed out when nothing but air intervenes between it and the percussing fingers. If a solid object, such as a large book or the like, be placed on a table, and the finger, held an inch or two above it, be percussed on lightly with a hammer, a slight but distinct alteration in the note can be made out as a finger is moved over the edge of the book. It follows from this that in percussing out dull objects the delimitation may be made by sound alone, and that the sense of resistance is not a necessary auxiliary.

Technique of Percussion of the Apices.—One of the principal uses of minimal and graduated percussion is the detection of early tuberculous infiltration of the lung. The greatest amount of information is obtained by percussing the supraclavicular fossa between the heads of the sterno-mastoid; next by percussing below the clavicle near to the sternum; third, posteriorly, close to the spine at the level of the first dorsal vertebra. Percussion of the supraclavicular fossa in the usual site—between the clavicular origin of the sterno-mastoid and the trapezius—is a mistake, because here we are not percussing over the true apex, but over the first rib. It is also a mistake to percuss posteriorly over the supraspinous fossa, because when the patient is seated in the usual way, with the arms in front of his chest, the greater part of the fossa is outside the bony thorax. The apex of the lung does not lie there, but close to the vertebral column, rising as high as the first dorsal spine. With minimal percussion the note is lost about 1 cm. below the true apex, but if the strength of the blow is very slightly increased a resonant note is got up to the very apex. If a dull area is detected, its degree is estimated by increasing the force of percussion and noting when it disappears. When slight dulness is detected it is advisable to percuss high up in the axilla, asking the patient first to raise his shoulder and then to put his hand over his head. In this way the second interspace can be percussed, and often a little dulness can be detected. In the second of his papers Goldscheider gives a long description of the results of his method, as controlled by X-rays, and by autopsies.

Waller's paper on percussion takes up a different line from the preceding. He considers that the interpretation of alterations in the percussion note is much hampered by the exclusive employment of

comparative symmetrical percussion. He points out (*a*) that when dulness is present in two symmetrical positions, and the difference is not great, the dulness is very apt to be overlooked on both sides; and (*b*) that when the difference is great, the more marked dulness is underestimated, and the less marked overlooked altogether. He thinks that percussion has to some extent lost its place in the diagnosis of phthisis for the above reasons the lesions being, as a rule, bilateral, comparative percussion tends to the underestimation of the dulness present. He divides the note yielded by an infiltrated apex into non-tympanitic [resonant], tympanitic, and amphoric where excavation has occurred. Over normal lung it is non-tympanitic [resonant]. If we trace the progress of the note in a case of advancing phthisis we have first resonance under light percussion, replaced by a tympanitic note at the end of expiration and the beginning of inspiration; then resonance disappears altogether during ordinary respiration, but reappears during forced breathing. Then comes a stage at which resonance is only obtained by forcible percussion, and, finally, one in which it cannot be elicited at all under any circumstances. On this basis he formulates the following scheme of estimating the degree of dulness:—I. Gentle percussion—(*a*) Resonance present throughout expiration and inspiration, but distinctly flat = 1st grade of dulness; (*b*) resonance only during a part of inspiration and expiration = 2nd grade of dulness. We then have recourse to II. Moderate percussion, resonance present = 3rd grade of dulness; resonance absent. We then have recourse to III. Heavy percussion, which gives either (*a*) resonance = 4th grade of dulness, or (*b*) no resonance = 5th grade of dulness.

References.

Goldscheider, *Deutsches Archiv. f. klin. Med.*, 1909, Bd. xciv. pp. 480-528; *Zeitschr. f. klin. Med.*, 1909, Bd. lxix. Heft. 3-4, pp. 205-280.

Waller, *Nord. med. Arkiv.*, 1909, Afd. II., Heft 1, No. 1, pp. 1-37.

SURGERY.

Seminal Vesiculotomy.

Eugene Fuller (*Medical Record*, 30th October 1909) contributes an article on the "Relief of Urinary and Genital Conditions through Surgery of the Seminal Vesicles." The operation, seminal vesiculotomy, is advocated for those cases not amenable to massage of the vesicles. The conditions that called for interference in 105 cases referred to in the paper are classified under the heads of urinary, genital, nervous and mental, and rheumatic. The urinary symptoms may consist of chronic or relapsing urethral discharge; shreds, pus, or bacteria in the urine; frequent, painful, or difficult urination. The

genital symptoms depend much on the severity of the inflammation, but vary from abnormal sexual craving with frequent bloody emissions to a state of sexual weakness. The nervous and mental symptoms are those of depression, confusion, apprehension and melancholy, and Fuller always examines the vesicles and the sexual state in young and middle-aged men with marked symptoms of neurasthenia or hysteria. He considers that the rheumatic symptoms are occasioned by a systemic absorption from a focus of seminal vesicular inflammation, and this focus need not be due to the gonococcus. In the list of cases it is interesting to read that out of 35 patients operated on, 15 were severe and acute, 13 were promptly cured, and 2 greatly relieved. Of 3 subacute cases, 2 were cured and 1 proved to be tuberculous. Seven of the 19 mental and nervous cases were cured and several relieved. In the majority of the genital and urinary cases a cure was effected.

Fuller's operation is not an easy one. The patient is placed in the knee-breast position with the knees separated and the hip and knee joints sharply flexed. An incision is made from close to one tuber ischii down to a point about three-quarters of an inch in front of the anus and to one side of it, and is carried across the middle line in front of the anus, and then up to the opposite tuber ischii. The left fore-finger is placed in the rectum, and by sharp and blunt dissection the rectum is separated from the base of the bladder and seminal vesicles. The vesicles are now incised and divulsed by the finger tip, and curetted if filled by granulations. A drainage tube and gauze are inserted for about 9 days, and the bowels induced to act every day. The patient is 2 weeks in bed, and leaves hospital in 3 weeks. The mortality has been nil, and apparently no interference to the sexual functions has resulted. J. W. Dowden.

Bier's Treatment in Gonorrhœal Epididymitis.

Barney (*Boston Med. and Surg. Journal*, 28th October 1909) advocates the use of Bier's congestion in cases of acute gonorrhœal epididymitis as the most valuable ambulatory method at our command. The patient stands in front of the operator, the scrotum is seized between the finger and thumb close up to the pubes, so pushing away the sound testicle and isolating a neck to the affected one. A piece of thin rubber bandage, 9 to 10 ins. long by 6 ins. broad, is then applied round the neck well up to the inguinal fold—it may encircle the neck twice or oftener—and is fixed in place by a strip of adhesive plaster which should not overlap. The degree of tightness is a matter of experience and experiment: there should be no pain, but almost instant relief. The bandage is next pulled downwards by its lower edge so that it lies smoothly and tightly over the whole testicle, and the overlapped margins of the bandage are held in place by a piece of adhesive plaster below the

scrotum. As profuse sweating of the part occurs, plenty of dusting powder should be used. The bandage should be kept constantly applied till all induration has gone; it requires, however, daily adjustment. J. W. Dowden.

Villous Tumours of the Rectum.

Various articles have recently been published in the French medical journals drawing attention to the clinical importance of that variety of tumour growth met with in the rectum and pelvic colon, the position of which, so far as its malignancy is concerned, is intermediate between the simple polypus or pedunculated adenoma and the fully developed columnar celled carcinoma.

Dubar and Leroy of Lille (*L'écho médicale du Nord*, 31st October 1909) describe such a case in detail. They draw attention to the rarity of the condition and the fact that, as a rule, the microscopic appearance is diagnostic. They consider that such tumours cannot be placed in the same category as simple adenomata, nor yet are they true adeno-carcinomata. The case they describe is that of a man, aged 29, who complained of losing great quantities of blood per anum. This had started about 10 years previously. To begin with, the attacks of bleeding came on about every 3 months, but, as the condition progressed, the intervals between the attacks diminished. For the last 3 years he had suffered from a well-marked anæmia, and also occasionally from mild colic. In March 1908, after taking a purgative, a tumour protruded through the anal aperture and prolapsed regularly afterwards whenever patient went to stool.

The size of the tumour was about that of an orange, and as it came down it was preceded by a fold of healthy mucous membrane.

The surface of the swelling was irregular, red in colour striated with blue, and covered with coarse nodules like grains of corn. The finger could be introduced through the centre of the swelling, which almost completely surrounded the lumen of the bowel. When the tumour was reduced its lowest part was 6 or 7 cm. from the anal aperture. A vascular adenoma of the rectal mucous membrane was the diagnosis made; the tumour was excised, and the divided healthy mucous membrane united.

Of numerous sections examined, none showed loss of continuity of the basement membrane, but there was a marked increase in the stroma between the glandular elements. The conclusion was that they were dealing with a tumour in a transition stage between simple adenoma and adeno-carcinoma.

In the same journal of 24th October 1909, Lefort and Verhaeghe describe 2 cases of prolapse in cancer of the rectum, and draw attention to the rarity of such a condition. The first appears to be a case similar to that just described.

A man, aged 45, was admitted to hospital for the fourth time in February 1907. The condition from which he suffered had lasted for 15 years. In 1892 he was operated on by Professor Folet for polypus of the rectum. No pathological report was obtained. In March 1899 he returned and complained that recently his previous symptoms, hæmorrhage, tenesmus, and the passing of mucous, had returned. On examination a tumour the size of a nut, with a broad base, was felt. A portion was removed, the pathological report on which was "rectal epithelioma." The tumour was then resected locally. The patient again returned in October 1902 with a similar condition, only more marked. The tumour was removed through a posterior incision and the lumen of the bowel reconstituted. The pathological report was "cylindrical epithelioma." There was no further recurrence for 4 years, but the patient suffered from incontinence. When seen in February 1907 he was suffering from anæmia, loss of weight and nervous debility, and a tumour the size of an egg prolapsed on the slightest exertion. A colostomy was performed, and, later, a perineal resection.

The history of the second case, somewhat imperfect, suggests that in it also the growth began as a villous tumour.

Vautrin (*Revue de gynécol. et de chir. abd.*, No. 5, 1909) describes the case of a villous tumour of the rectum in a man, aged 42, for which he excised the rectum. GEORGE L. CHIENE.

Surgical Treatment of Chronic Jaundice.

In speaking of the treatment of chronic jaundice, Kehr (*Munch. med. Wochenschrift*, Jahrg. 56, No. 45) asserts that the relative proportion of this condition to milder affections of the biliary system has increased in recent years. In his opinion, chronic jaundice that has resisted medical treatment even for a short time is an indication for operative treatment. Of 125 operations on the biliary system performed during last year, jaundice was present in 45. In 36 of these it was due to gall-stones, in 4 to stricture, in 2 to carcinoma, and in 3 to pancreatitis.

The differential diagnosis between these conditions and simple catarrh depends on the presence of pain. Duodenal catarrh and pancreatitis as a cause of jaundice are, as a rule, painless, although in the latter there is frequently a feeling of discomfort. If after 6 weeks, in an apparently catarrhal jaundice, improvement does not take place, operation is certainly indicated. Jaundice which is accompanied by pain is to be treated expectantly, unless fever or commencing emaciation supervene. Repeated attacks of fever, recurring at intervals of 3 or 4 weeks, with discomfort in the liver or stomach region, suggest cholangitis. Variation in the intensity of the jaundice is

characteristic of a stone in the ductus choledochus. The duct dilates and the stone floats in the bile, which escapes temporarily till the stone is pressed further down. When the cause is stricture, or tumour pressure, there is a steady increase in the intensity of the jaundice.

The state of the gall-bladder in these various conditions is of interest. With gall-stones it is, in 70 to 80 per cent. of cases, shrunken, while in tumour growth it is enlarged. Chronic jaundice gives rise sooner or later to biliary cirrhosis and cholangitis, and this can be relieved in the early stages by drainage of the hepatic duct. The fear of haemorrhage in these cases often prevents doctors from recommending operation, but a course of chloride of calcium (gr. 2, thrice daily) for a week previous to operation is often efficacious in preventing bleeding.

Cholecystectomy, in Kehr's opinion, is the operation of choice in gall-stones, and secondary operations on the ducts are not rendered more difficult, by the absence of the gall-bladder, in the hands of experienced surgeons.

Eleven deaths are recorded in the 124 cases. Kehr attributes his good results to strict asepsis, a large abdominal incision, rapid operating, and sufficient drainage. In his experience the Cammidge reaction is too difficult for the general practitioner to carry out, and too uncertain in its result to be of any practical importance, except in the hands of an expert. E. Scott Carmichael.

Pancreatitis in Relation to Biliary Lithiasis.

Kehr (*Mittheilung aus d. Grenzgeb. d. Med. u. Chir.*, Bd. xx. Heft 1) believes that pancreatitis must necessarily be a frequent complication of biliary lithiasis. Out of 350 laparotomies for disease of the pancreas and cholelithiasis, in 129 there was disease of the pancreas. He believes that "catarrhal jaundice," so called, is due to a mild pancreatitis secondary to duodenal infection.

In 71 cases of pancreatic carcinoma, 30 seemed favourable for cysto-gastrostomy. Ten of the cases subjected to this palliative measure lived more than 2 years, and increased as much as 40 lbs. in weight, so that at the end of the first year he was led to hope that only a chronic pancreatitis had been present. He urges this operation in all cases of pancreatic carcinoma with chronic jaundice, as, if unrelieved, they may die in 6 months.

In Kehr's experience pancreatic carcinoma runs a painless course. In chronic pancreatitis 97 per cent. are cured by cysto-gastrostomy. He does not hold to his former view of not operating on the biliary passages when there is sugar in the urine, and he always operates when the Cammidge test is positive. He believes this test to be of

some value in expert hands. Its presence increases the indication for operation, especially when it is positive a second time after 4 weeks' treatment with rest and dieting. E. Scott Carmichael.

Torsion of the Omentum.

During the past ten years, according to Ph. Schönholzer (*Corresp. Blatt. f. Schweizer Aertze*, 15th November 1909), torsion of the omentum has received an ever wider recognition as a pathological entity, which may be diagnosed during life, and which calls for surgical interference. Thus, whilst in the year 1900 there were only 5 cases of this condition on record, there are now over 70 cases reported in medical literature. The recorded cases may be grouped in two series: (1) those associated with the presence of a hernia; and (2) those occurring in the absence of a hernia. In the first series the etiology of the condition is usually as follows:—The patient has had for some time an epiplocele; the portion of omentum in the hernial sac hypertrophies and becomes thickened from chronic omentitis, the result of repeated trauma. This mass of omentum is connected by a stalk with the main body of the omentum in the abdomen. If this omental mass is replaced, by forcible taxis, within the abdominal cavity, it is liable to torsion on its narrow stalk. The omentum may remain within the hernial sac, however, and the torsion may first occur in the intra-abdominal portion and then affect the intra-saccular portion. If the omentum be adherent to the sac a double torsion occurs, the spiral twists running in opposite directions.

In the second series of cases in which torsion of a free intra-abdominal omentum occurs, there is always evidence of a preceding omentitis. In such cases the distal portion of the omentum consists of a thickened mass of chronic inflammatory tissue. This, by its weight, exerts traction on the proximal part of the omentum, which becomes attenuated and stalk-like. From some sudden movement or violent strain this pendulous omental mass becomes twisted on itself, and soon gives rise to the features of strangulation. The omentitis has usually been a secondary infection from an appendicitis.

The symptoms are those of any other intra-abdominal torsion, and the differential diagnosis is not easy. Acute abdominal pain coming on after some violent bodily exertion, associated with vomiting and the formation of a tender swelling in the abdomen, especially if it be on the same side as a hernia, make one suspect this condition.

If left untreated, death may result from septic peritonitis. Among the 70 cases recorded there were 8 deaths.

The treatment consists in opening the abdomen and resecting the strangulated omentum. D. P. D. Wilkie.

Tumours of the Sigmoid.

In operations for the removal of sigmoid growths, the most important technical point to be considered, according to W. J. Mayo (*Montreal Med. Journ.*, October 1909), is the mobilisation of the bowel above and below the part to be resected. By incising the peritoneal fold on the outer side of the descending and iliac portions of the colon, these parts of the bowel can be lifted from their bed and drawn inwards on the inner leaf of their mesentery, which contains all the nerves, blood-vessels, and lymphatics. The vessels supplying the part to be removed can thus be readily secured near their origin.

Primary resection, followed by end-to-end anastomosis, must only be practised when the bowel above the growth is tolerably well emptied. To perform primary resection of an obstructed large intestine is, as a rule, to court disaster. In moderate chronic obstruction, the colon above the growth may be emptied by means of a Monk's tube; the tumour may then be resected, a lateral anastomosis performed, and the bowel at the site of resection implanted in the abdominal wound after Bloodgood's method. The Miculicz-Paul three-stage method gives excellent results in selected cases. In resection of a tumour of the lower end of the sigmoid, end-to-end anastomosis is greatly aided by passing a large rubber tube per rectum, and fixing it with a catgut suture to the proximal cut end of the gut. On pulling this tube downwards the cut ends meet, when they are united by interrupted catgut sutures. Further traction on the rectal tube causes a slight intussusception, and a second seromuscular layer of sutures is inserted. The rubber tube comes away after 4 or 5 days.

The writer has resected the sigmoid for carcinoma in 34 cases, with an operative mortality of 13 per cent. Twenty cases were alive one or more years after operation. D. P. D. Wilkie.

DISEASES OF CHILDREN.

By A. DINGWALL-FORDYCE, M.D., F.R.C.P.,
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In the *Jahrbuch für Kinderheilkunde*, January 1907, March 1907, July 1907, November 1908, and December 1908, there appear long articles by Finkelstein on "Alimentary Intoxication in Infants," and in the *Archives of Pædiatrics*, November 1909, Snow gives an abstract of the views therein set forth. In many respects the ideas of Finkelstein respecting the etiology and therapeutics of infantile gastro-enteric diseases disagree very markedly with the prevailing opinion on the subject among American pædiatric physicians. He believes that the digestive troubles of babies are more frequently due to perverted metabolism, and to the

toxic effect of food elements, fats, and carbohydrates, than to bacterial infection. He calls the familiar infantile troubles intoxications, and asserts he is able to show that not only faulty development, vomiting and diarrhœa, but also more serious toxic signs—fever, cerebral disturbances, excitement and somnolence, choleraic and typhoid symptoms—may be due to diseased perverted processes of nutrition. The effects of food elements upon the digestion are studied as we watch the effect of medicines. He is able to produce symptoms and also to relieve them by increasing or reducing fats and carbohydrates.

Finkelstein is convinced of the unity of nutritional disturbances.

All the different maladies—fermental diarrhœas, ileo-colitis, cholera infantum, acute and chronic dyspepsia, and marasmus—are only subdivisions of digestive disturbance of function, which, according to their intensity, produce various symptom-complexes. The local digestive symptoms are often no index to the danger. The most severe intoxications may appear with a slight dyspepsia or normal stools. The quantity as well as the quality of the food is of importance, and in the presence of a disturbed digestion a change for the worse will occur if the quantity of food is suddenly increased.

The effect of food elements can be tested by adding or subtracting them from the diet and observing the reaction. The result of the additional increase of sugar of any kind is to precipitate the outbreak of the intoxication, and its diminution or withdrawal is to cause a disappearance of symptoms. The number of intoxications in Finkelstein's institution has steadily sunk with the careful use of sugar, and a relapse in convalescence is usually attributed to too much sugar.

If the existing tolerance of fats is exceeded, mild disturbances develop into complete intoxication, and even slight quantities of fat may cause serious symptoms. The author states that during an intoxication the toxic quality of fat depends on the patient's susceptibility to fat and not to the intestinal flora. With children whose intoxication is due to severe milk injury fat is especially toxic. If an intoxicated baby takes large quantities of breast milk, the cure is much slower than if put on a water diet, and the opinion is erroneous that an intoxicated baby that cannot tolerate breast milk will die. Breast milk is injurious from its fat.

In contrast to sugar, fat increases the intoxication only when the process is active. At other times fat may be injurious, but not in the way of causing an intoxication. With children fed on diluted whole or top milk mixtures with little sugar the severe disturbances are of the nature of atrophy and not intoxication.

Apparently accidental changes are the direct result of feeding. The clear association between quantity and kind of food and the rise and fall of the intoxication make it impossible to retain the idea that acute, feverish, toxic aggravations of a disturbed nutrition are the

result of an accidental infection. How is it, he says, if infections are the cause, that during a whole year with improved dietetics intoxications in nutritional disorders have been completely suppressed? With certain diets no intoxications occur; with others they are very common. Contrary to the prevailing teaching, casein does not cause intoxication. Fat and sugar are the causes of intoxication, and detoxication is only possible by excluding fat and sugar. The study of appropriate cases shows that the toxic effect of fat is seen only in cases where the organism is badly damaged in a specific way from other causes, usually by a sugar injury. From now forward sugar must be counted as the cause of severe and often fatal toxæmia, and the dangerous property exists in all kinds of sugar.

It may be urged, as an objection to the theory of the alimentary nature of the symptoms of intoxication, that some cases are not benefited by the withdrawal of food. There is a stage in functional injury when, even without the addition of more toxic material to the body, it is incapable of detoxication or excretion of the existing poisons. The child dies before improvement can occur. An infectious complication may also exist, which may cause fever and hinder recovery. The poison of the intoxication does not come from bacterial decomposition of the intestinal contents, but from disturbed metabolism. From this standpoint it is conceivable that in the most severe cases, not only the intestines are injured by the food elements, but also the body reserves of fat and glycogen are affected, and that the alimentary intoxication is a true auto-intoxication.

Czerny and Keller have made an important advance by the creation of the term "food injury." The healthy child is characterised by a physiologic breadth of tolerance for various kinds of food: with a disturbance of nutrition there is a lowering of tolerance for both quantity and kind of food.

Four types of disturbance of nutrition are given having numerous transitional stages:—

First Stage—Disturbance of balance: the breadth of tolerance is lessened: with a limited diet the child is normal. An increase or variation of food will diminish the weight.

Second Stage—Stage of dyspepsia. The degree of tolerance is much diminished, so that the child only remains free from symptoms when the diet is just at, or under, the need of nutrition.

Third Stage—First severe type of decomposition or atrophy. The toleration of food, first against fats, later against sugar, is injured in the most extreme degree. With an increase of food the child reacts with a sudden loss in weight, subnormal temperature, irregularities in the rhythm of breathing and cardiac depression.

Fourth Stage—Intoxication.

There are two severe forms of infantile nutritional disturbance

which may exist separately or may be associated. First, alimentary intoxication. Second, alimentary decomposition or atrophy—a condition which is free from all signs of toxæmia, and which passes through the stages of disturbance of balance and afebrile dyspepsia with continual emaciation to a state of alimentary decomposition.

Finkelstein's observations were made only on children who were given milk mixtures. In the stage of balance disturbance the organism assimilates the foods in necessary quantities, but does not do the work with normal steadiness. With a disturbance of balance the most important *rôle* is played by fat. Children who digest fat poorly usually possess an undiminished tolerance for carbohydrates, and often make great progress on fat-poor, carbohydrate-rich diet.

With a transition from the stage of dyspepsia to that of atrophy there is a steady emaciation. In atrophy the food elements which cause the wasting are fats and carbohydrates: increasing the fats accelerates the loss in weight: disturbances of heart-beat and rhythm of respiration may be caused by addition of fats and relieved by their withdrawal.

Alimentary decomposition or atrophy may be divided into three stages:—

1. Resembles dyspepsia. Restriction in food is followed by an arrest of emaciation and improvement in stools.

2. Loss in weight is arrested very slowly: stools remain pathological. Increasing the food causes a recurrence of symptoms. Recovery by artificial food is exceptional.

3. The functional tolerance is almost gone. It is not to be controlled by even small amounts of food. Its weakness is demonstrated by the injurious effects of rich breast milk. In most cases death is due to a terminal intoxication from sugar.

MENTAL DISEASES.

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General Paralysis.

The pathology of general paralysis is very fully discussed in an interesting paper[1] by Dr. Earnest Jones. The author desires to show that this disease links general medicine and pathology to the special department of psychiatry. It is to be regarded as a clinical entity with quite distinctive pathological features, especially observable microscopically. "The normal division of the cortex into different layers is here disturbed to a degree found in no other disease. . . . The

thickening of the pia is seen to be due, not to hyperplastic changes, as in alcoholic, senile, and arterio-sclerotic conditions, but to an enormous cellular infiltration. This infiltration differs from that which occurs in tertiary syphilitic lesions in being very diffuse and not distributed in foci, or following the lines of the nerves and blood-vessels, and in being exceedingly heterogeneous. Whereas in tertiary lues it is made up almost entirely of lymphocytes, in general paralysis it comprises all kinds of cells. Plasma cells of all ages may be seen, mast cells, lymphocytes, &c. The pial changes in lues are primary to the cerebral ones, and the two can be closely correlated: this is not the case in general paralysis. . . . The nerve cell changes, although pronounced, are not peculiar to general paralysis. . . . In tertiary lues many swollen cells may be seen, but they do not disappear as the result of atrophy in the way they do in general paralysis. . . . The degeneration of nerve fibre is greatest in the associated tangential fibres, but is also marked in the efferent projection fibres. In the senile psychoses degeneration of the myelin sheath occurs, but there is no secondary degeneration of the axis cylinder, as in general paralysis." He considers that the glia overgrowth is very diffuse, and that the presence of giant spider-cells with thick vascular processes is characteristic of general paralysis. "One never sees the plaques of fine unicellular fibres so characteristic of the senile psychoses." The changes in the blood-vessels he believes to have great differential importance: although he admits new formation of vessels is also seen in tertiary syphilis and at the site of old haemorrhages. The adventitial cells proliferate, but do not attain the large size often seen in syphilis. The adventitial lymph-spaces are distended by plasma cells, mast cells, and lymphocytes. Hyaline degeneration is slight, and occurs late in the disease, and contrasts with the "advanced retrogressive changes found in arterio-sclerosis, alcoholic and senile psychoses," and in cerebral syphilis. In syphilitic endarteritis the coats may become indistinguishable from retrogressive degeneration. They are infiltrated with cells secondarily to pial infiltration, but not to the same extent as in general paralysis. The plasma cell (?derived from the lymphocyte) is fairly large, with a thick nuclear membrane and metachromatic protoplasm, which gets lighter as the cell ages. The protoplasm is lighter round the nucleus, and is often tinted yellow. It is usually confined to the adventitial lymph-space of small vessels, the lymphocytes in the larger. Mast cells are spherical or ovoid, with large oval eccentric nucleus, badly marked off from surrounding protoplasm. Very frequent and characteristic are the rod-shaped or "Stäbchen" cells (?adventitial origin), with branching protoplasm, lying on the outer surface of adventitia of new vessels: seen also in other diseases, particularly tertiary syphilis, but only in focal lesions, when they are short and atypical. The foregoing anatomical picture, he considers, is all-sufficient for a trained observer to

decide without hesitation that the material is from a case of general paralysis.

With regard to the examination of cerebro-spinal fluid, he asserts—(1) That the pressure is almost constantly raised, even four times the normal. (2) The proteid content is always increased, as may be shown by Heller's nitric acid test employed in urinalysis—the extent being fairly judged by the density of the ring, or the time necessary for its formation. Normal globulin content is increased four times in general paralysis. Wassermann's antibody is said to be contained in this variety of euglobin in such fluid. This euglobin can be well demonstrated by Noguchi's method, and that of Jones and Ross of Toronto.

(*a* Add ·5 c.c. of 10 per cent. solution of butyric acid in normal saline to ·2 c.c. of cerebro-spinal fluid. Raise to boiling point. Add ·2 c.c. of a 4 per cent. sodium hydrate solution. Again heat. Within a few minutes a coarse flocculent precipitate forms.

(*b*) Gently pour a little cerebro-spinal fluid on to a saturated solution of normal ammonium sulphate. A fine greyish-white ring forms at junction of the liquids.

Lymphocytosis (40 to 50 cells per c.mm.) occurs at the very onset of general paralysis. Endothelial and plasma cells, phagocytes and polymorphs are also present, the last named being in greater numbers during seizures and in cases running an acute course. These tests do not require special skill as in the case of Wassermann's reaction, of the reliability of which, however, the author is convinced. "The reaction is invariably positive with the blood-serum of the general paralytic, and almost always with the cerebro-spinal fluid; it is commonly positive with serum of patients suffering from syphilis, but only rarely with the cerebro-spinal fluid, even when the nervous system is implicated. . . . Various antigens of a lipoid nature, present in especially large quantities in syphilitic organs, interact, probably as a colloid precipitation phenomenon, with some substance which is contained in euglobin; the combination has the power of combining with the complement, and thus inhibiting hæmolysis. . . . All the evidence, drawn from the most diverse sources, converges with fatal convincingness towards the one and only specific factor in the production of general paralysis, viz. syphilis." He further bases his belief as follows:—"The amazing correspondence between the distribution in different countries, in different towns, in different social classes and occupations, and between the age and sex incidence of the two diseases; the study of the inherited and conjugal cases; the incidence of syphilis in paralytics seen in history and post-mortem evidences, and the difficulty of inoculating the patients with syphilis; the constant presence of Wassermann syphilitic substances; the frequency with which syphilities later develop general paralysis: all these considerations are in fullest harmony with the pathological evidences, which demonstrate the essential relationship." . . .

Most of these contentions are not quite free from fallacy. The paucity of cases of general paralysis in many syphilised countries is notorious: the distribution in towns, social classes and occupations may yet be explained on the ground of faulty methods of living and by contagion. This latter source is held by those who support the specific bacillary theory, to which, by the way, the author makes absolutely no reference. General paralysis may occur between the ages of ten and eighty years. Conjugal and familial cases can again be explained by special bacillary infection, although it must be conceded that most congenital cases have evidence of hereditary syphilis. Acquired syphilis cannot always be demonstrable. One is not convinced that he is correct in asserting that post-mortem evidence of syphilis is common in general paralysis: if so, what becomes of his pathological distinctions above cited? The "difficulty of inoculating general paralytics" is not supported by uncontrovertible evidence. The experiment reported by Krafft-Ebbing, where nine general paralytics were inoculated with material from a hard chancre, was not controlled by ascertaining if it were capable of producing syphilis in any human subject, syphilitic or non-syphilitic, and not the subject of general paralysis. The frequency with which syphilities develop general paralysis is 1 per cent. (Joffroy), probably much less than that of tuberculosis in persons with a history of measles. While admitting, in conclusion, that "researches, when viewed in too one-sided a way, appear to be abstract, dry and fruitless," he claims "that the results thus obtained should serve as an active stimulus to further and more profound investigation in these and allied realms of study." It is the opinion of some of us that the "allied realms" might be found to be less "fruitless" than the entirely syphilitic one.

In a recent paper,[2] Flashman and Latham state their views thus:— The belief that syphilis is not the direct cause of general paralysis is not shared by all. Only a small percentage of syphilities become general paralytics. Cases are recorded where syphilis has been acquired after onset[1] of general paralysis. Although regarded as a post-tertiary manifestation, yet secondary eruptions may occur during the course of the disease. And cases of general paralysis often occur which are, in all human probability, free from syphilis. They do not consider the work of Wassermann, Neisser, and Plaut on deviation of the complement has been sufficiently investigated or corroborated to prove that syphilis is the indispensable factor in the production of general paralysis. They refer to the discovery of Ford-Robertson, M'Rae, and Jeffrey—the special prevalence of diphtheroid organisms in the gastro-intestinal and respiratory tracts—and how subsequent investigations, continued by Ford-Robertson and the abstractor, showed the constant presence of diphtheroid organisms in cases of general paralysis in the alimentary, respiratory, and genito-urinary tracts, blood, spinal fluid, and brain.

[1] One attack of syphilis does not protect from another.

They allude to their specific intra-corpuscular bacteriolytic index and to the production by them of clinical and histological changes in rats resembling the disease in man. Flashman and Latham believe that the evidence of the production of general paralysis in rats has not been sufficiently demonstrated, but consider that they have themselves now "absolutely and definitely supplied the link." It would be more correct to say that they believe they have "strengthened the chain!" They have not described the biochemical tests employed, nor have they distinguished the types of bacillus (paralyticans long. and brevis) which they isolated from a case. They produce in tabular form the results of injection of bacilli and toxins and the feeding of a series of rats. They obtained similar results as described by Ford-Robertson but claim that they had obtained far more striking histological changes, which indeed greatly surprised them. These consisted of pronounced neuroglial overgrowth in brain, pons, medulla, and even periphery of cord, and in areas of brain complete destruction of nerve cells: typical periarteritis, increase in size and number of vessels entering the cortex from the pia, which was much thickened, and showed marked lymphocyte infiltration. Broncho-pneumonic patches were seen in the lungs, and the kidneys showed cloudy swelling, with areas of lymphocyte invasion. They conclude by stating their views in regard to the etiology of general paralysis thus:—(1) In the vast majority of cases syphilis is the primary cause. (2) There is an increasing amount of evidence to show that some forms of diphtheroid organisms may play a considerable part in the production of the pathological picture.

Ford-Robertson's most recent research in the experimental production of general paralysis was the subject of a paper[3] read before the Medico-Psychological Association. The experiments were framed to ensure actual contact of the bacilli with the nervous system by injection of cultures (B. paralyticans longus) into the spinal canal of the rabbit through the interspace between the seventh lumbar and first sacral vertebræ. In the first two instances, after two and three injections, the rabbits died. Severe primary degeneration of the nerve fibres was found with infiltration of the pia and adventitia of vessels by lymphocytes and plasma cells, and also marked neuroglial hypertrophy and proliferation. The third rabbit, after seven injections during four and a half months, developed "caterpillar" gait and became demented. Similar changes were found post-mortem, but in addition there was well-marked proliferation of the cells of the ependyma. He next raised the toxicity of the bacillus by growth in sterile brain emulsion. A convulsive seizure resulted thirty seconds after injection, and much more pathological change was found post-mortem. Examination of the cerebro-spinal fluid of the experimental rabbits showed lymphocytosis; and in the four instances in which he applied the Nissl-Nonne test the reaction was positive. Two lots of cultures were made from the centri-

fuge deposit of the cerebro-spinal fluid seven days after injection of a full dose of living bacilli, but all the tubes remained sterile. This is experimental confirmation of the difficulty in obtaining living organisms from the nervous system of the paralytic patient during life. In the discussion which followed, Dr. Orr stated that observations made by Dr. Rows and himself established the fact that the bacillus paralyticans had neuro-toxic properties.

An extensive bacteriological research was the subject of a paper[4] by Dr. Scott Williamson, read at the same meeting, in which the author summarised his conclusions thus: "It may be taken as proven that bacilli having the characteristics of Dr. Ford-Robertson's and M'Rae's paralytica type do exist. That they are widely distributed . . . common in normal skin and throat. They give rise to disease. That the disease is generally of a chronic type. That the bacilli disturb the opsonic content of the blood-serum. They produce an immune body, and can act as an antigen. That the antigen may also be produced at the seat of disease. That the blood-serum of the person infected by these bacilli does give the serum responses typical of bacillary infection." By a very free use of "slumping," his interpretations and conclusions are not easy to follow and by no means convincing. The following sentence may be taken as an example:—"That the general paralytic can give all the above tests in response to artificial and natural infection with the bacillus paralyticans, but does not." He believes "the bacilli of Drs. Ford-Robertson and M'Rae may be a considerable factor in the secondary infections of many general paralytics," because they possess "a peculiarity in common" with other organisms of flourishing where there is lowered resistance—a "peculiarity," one would imagine, common to all inimical forces, whether animate or inanimate. In his final sentence, "The establishing of a special neuro-toxicity for the bacillus is not a complete argument for its specificity in general paralysis," he certainly suggests that it is not far short of it!

In a paper[5] on the "Wassermann reaction in relation to General Paralysis," Drs. Browning and Ivy Mackenzie maintain that general paralysis is a para-syphilitic affection, although the spirochæta pallida has not yet been demonstrated, possibly because the organisms may be present in a different form as a stage of their life cycle, or be so few in number as to render demonstration extremely difficult. They state that nothing is known as to the nature of the substances in the serum which give rise to the reaction, and that it is not due to a specific syphilitic antigen, but that a great variety of lipoid compounds may serve to produce similar results along with a syphilitic serum. They admit that it is impossible to say that a positive reaction is proof of the presence and pathogenic activity of living organisms. They advance the hypothesis that some intercurrent condition may call from abeyance into renewed activity metabolic processes which were originally set up by

syphilis. The similarity of the clinical, histological, and biochemical features in general paralysis and trypanosomiasis is indeed strikingly brought out, and they would appear to hold that the presence of trypanosomes in the cerebro-spinal fluid in the latter strongly suggests the presence of active spirochætes in that of general paralysis. The supposed immunity of the general paralytic to the syphilitic virus, believed to be demonstrated by Krafft-Ebbing's historical experimental inoculation of material from a hard chancre, can be explained on the assumption that the patient still harbours the organism, Browning himself having experimentally shown that immunity to syphilis is short-lived. They ascribe the failure of antisyphilitic treatment to the fact that the virus may have become serum-resistant or drug-resistant, as in experimental trypanosomiasis: or that the site of the lesion may be responsible, since it has been shown by Mackenzie and Martin that the immune substances in cerebro-spinal fever are present in the blood-serum but not in the cerebro-spinal fluid. Two severe cases of this disease were successfully treated by intra-spinal injection of their own serum—a method which has now been universally adopted. In conformity with Dr. Andrew Balfour's advice in the case of sleeping sickness, the authors suggest intra-spinal injection of the general paralytic's own serum.

In a recent publication[6] Pighini asserts that the active substance in syphilitic fœtal liver is not specific, but is present in other tissues, and gives rise to Wassermann's reaction if sufficient amount be used. This substance would appear to be cholesterin, which he shows to be present in the cerebro-spinal fluid in 80 per cent. of general paralytics, 66 per cent. in epilepsy, and 43 per cent. of cases of dementia præcox. He cites a number of diseases in which the reaction has been obtained by other observers, *e.g.* pneumonia, diabetes, tuberculosis, typhus fever, neoplasms, elephantiasis, framboesia, trypanosomiasis, malaria, echinococcal infections, mental disease exempt from syphilis, as hydrocephalus, alcoholic delirium, alcoholic pseudo-tabes, multiple sclerosis, &c. Still more recently the serum of absolutely normal dogs, which is found to contain more cholesterin than in the human subject. He summarises as follows:—(1) Cholesterin is contained in the livers of the normal fœtus and syphilitic fœtus, but the quantity is ten to fifteen times greater in the latter. (2) The cerebro-spinal fluid of cases of general paralysis, epilepsy, and dementia præcox which gives Wassermann's reaction always contains cholesterin, and mostly sufficient to be demonstrable in crystalline form. (3) Where no reaction was obtained, cholesterin was absent or only in such a small quantity as scarcely to be detected by Libermann's delicate test. (4) In all probability there is a close causal connection between cholesterin and Wassermann's reaction, although some other substance may be present to initiate the process.

"Blood pressure and Vascular Disease in the Insane" forms the

subject of a paper[3] by Dr. John Turner, in which he would appear to controvert the contention of Maurice Craig that the pressure in melancholia is high and in mania low. Indeed, he shows the opposite to be the case in many instances. Moreover, he found that the case with a high pressure continued so whatever the emotional state might be, and similarly in cases where the pressure was low. His observations (2000) in forty five cases of insanity and seven controls, with regard to the relation between coagulation rate and pressure (although admittedly liable to error, and depending much on the personal factor of the operator), showed that there is a slight tendency for the higher blood-pressure to be associated with slower coagulation, and *vice versâ*. In connection with the existence of arterio-sclerosis in insanity, he ascribes the lowering of pressure to the presence of liver gland-cells in the blood-stream (Salaman), and increase in pressure to the presence of kidney gland cells shed from the tubules (Batty-Shaw), and possessed of a substance which directly affects the force of the heart's action. Resistance to the peripheral circulation is not always adequate to account for persistent rise in pressure, since in nearly half the cases exhibiting granular kidney post-mortem, no rise in pressure was demonstrable during life. As the result of microscopic examination, he believes that the frequency of structural changes in the smaller blood-vessels, especially of the kidney, points to the great importance of vascular lesions in the histogenesis of insanity.

"Mental Symptoms in Exophthalmic Goitre" is the subject of a paper[8] in which Dr. Gilmour demonstrates the use of milk from thyroidless goats, as compared with the employment of drugs and Moebius's antithyroid serum. Since antithyroidin is a normal secretion of the body in health, it had occurred to Mr. Edward of London that a goat deprived of its thyroid would have an excess of the substance in its milk, which could be thus appropriately administered to patients the subject of hypersecretion of the gland. In three cases treated by Dr. Gilmour very considerable improvement followed, and one case completely recovered. One goat was kept for the exclusive use of each patient, who was given the entire daily supply: in one case as much as 98 quarts during 18 weeks.

References.

[1] *Dominion Medical Monthly*, Toronto, October 1909.

[2] *Transactions of Australasian Medical Congress*, vol. iii.

[3] *Journal of Mental Science*, October 1909.

[4] *Ibid.*, October 1909.

[5] *Ibid.*, July 1909.

[6] *Undersuchungen über Reaction der Wassercentren* par. Dr. Giacomo Pighini; *Zentralblatt für Nervenheilkunde und Psychiatrie*, November 1909.

[7] *Journal of Mental Science*, July 1909.

[8] *Ibid.*, October 1909.

DERMATOLOGY.

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Assistant-Physician, for Diseases of the Skin, The Royal Infirmary.

The Treatment of Varicose Veins and Ulcers of the Leg by the Zinc-Jelly Bandage.

Hecker (*Berliner Klinik*, October 1909), after pointing out the defects of the usual methods by intermittent bandaging, records his experience of twenty years in the cure of varicose veins by the above simple and inexpensive plan. The mode only applies to varices below the knee—their most frequent situation. The limb must first be thoroughly cleansed in a warm foot-bath with soap and water, and then shaved (to avoid the attachment of the dressing to the hairs), and finally divested of grease by mopping with benzine or ether, in order that the jelly may adhere. All visible dilated veins ought then to be thickly painted over with ichthyol collodion, 1 in 10. The zinc jelly to be used is thus prepared:—Into a vessel placed in a water-bath there is poured 40 parts of water; to this is added 10 parts of powdered gelatine, and stirred till dissolved. With this is now slowly incorporated 40 parts of glycerine, with which 10 parts of oxide of zinc have been intimately mixed. When all the ingredients have been combined into a uniform consistence at a moderate heat, the vessel is removed from the water-bath and the contents allowed to cool and solidify. The mass of jelly so obtained, if kept in a closed jar, will remain good indefinitely. Before being used, the jelly, in convenient amount, is again rendered fluid in a water-bath. The patient should be in bed, and the leg is held up vertically for a sufficiently long time to empty the veins. The entire cutaneous surface is now painted over with a thick coating of the fluid jelly as far as the knee, by means of a stiff brush, care being taken that the jelly is not overhot. Lest the bandage when it hardens should fray the skin, the foot near the toes, and the leg for a hands-breadth below the knee, should be enveloped in cotton-wool. The ankle where the bones project is better protected by fitting in pieces of amadou carefully freed from any hard portions. Two starched strips of muslin, 11 yards long and about 4 inches broad, are now rolled from each end towards the middle, so as to form a double-headed bandage. With such one can exert a much stronger and more uniform pressure than with a single one. The bandages are dipped in water and well squeezed out. Commencing at the ankle, the bandage is carried to the root of the toes and over the cotton wool, from thence

again to the ankle and up the leg, the limb being all the time kept horizontal. The bandage crosses at each turn, always overlapping the previous one by one-half, and the pressure should be firm but equable. An inch or more of the cotton-wool should project above the upper limit of the bandage under the knee. Over the first bandage the second is put on in the same manner. The starch which has exuded during application should now be smeared smoothly over the surface with the moistened hand and the application allowed to dry thoroughly, the limb being maintained in the horizontal position till solidification is complete. By leaving the toes uncovered, any disturbance of circulation in the limb can be at once detected. This as a rule only arises if the tightness of the bandage is irregular. To get a good result the bandage ought to be applied fairly firmly, and thus enough care cannot be taken to exercise absolutely uniform pressure in putting it on, otherwise painful compression and congestion may be occasioned. Such a bandage may remain undisturbed for weeks, nay, even for months. Renewal is only called for when the circumference of the limb has so much diminished that the bandage is no longer sufficiently firm. Should there be too much compression on any one part, this ought to be damped by means of a sponge dipped in warm water, so as to soften the starch and allow expansion. It is not necessary to remove the bandage. When required, the bandage is best separated either by cutting it by strong scissors, or by soaking with warm water and unrolling. The layer of zinc jelly can then be washed off in a warm foot-bath. Cases in support of the method are cited in full, where, after from five to seven months' continuous use of the bandage, the varicose veins had shrunk to insignificance, though active exercise had been indulged in all the time. In the case of ulcers of the leg, if there is eczema of an inactive type of the neighbouring skin, this should be treated by painting over with the zinc jelly, or by smearing on Lassar's paste made without any salicylic acid. If, however, the eczema is in an acute, inflamed condition, then rest in bed, starch poultices, or lead fomentations are necessary as a preliminary. The ulcer, having been suitably cleansed, is covered with a thick layer of airol and cotton-wool, and the limb dealt with exactly as in the case of varicose veins. On an average, the bandage, even the first, may remain undisturbed for three weeks. Only when the secretion is very abundant is a more frequent renewal necessary. Moderate soaking of the dressing with discharge in no way interferes with the cure. The patient can pursue his ordinary occupation while wearing the bandage. The pain ceases very soon, generally even with the first application. The resulting cicatrices are firmer and more permanent than are procurable by any other suggested plan, hence recurrences are rare. It is advisable, however, that even after complete cure the zinc jelly bandage be worn for some time, and subsequently, till the scar is con-

solidated, a well-fitting cotton one. Many examples are given of the advantage of this method in the case of workhouse patients, but perhaps the most convincing proof is afforded from the experience of Professor Trzebicky in Krakau. In 1897, when the method was introduced, 50 cases were cured, while in contrast, of 108 admitted to hospital in the three previous years, 28, equal to 26 per cent., had their legs amputated.

Iodine Treatment in its Relation to the Quantitative Excretion of Iodine.

Fischel (*Archiv. f. Dermat. u. Syph.*, Bd. xcvii. Hefte 2 u. 3, 1909, Vienna) remarks "as mushrooms crop up after a shower of rain, so do new preparations of iodine, and one hardly knows which is most surprising, the fertility of language of their producers, or their chemical inventiveness." These compounds may be divided into two groups—the inorganic, of which the alkaline iodides are the representatives, as iodide of sodium, iodide of potassium, &c.; and the inorganic, of which there are two subdivisions—the iodised carbohydrates, where iodine is combined with a fatty basis (iodipin, sajodin), and the iodine albuminates (iodol, iodalbacid, iodoglidine). When we investigate the action of these preparations it must be primarily noted that we have exclusively to deal with iodide of potassium, as in whatever form the iodine is blended the greater part is transformed within the animal system into that salt. In prescribing iodides there are certain postulates to be fulfilled. The total amount of iodine excreted in the inception of exhibition should not be too great, *i.e.* it must be retained for an appreciable period in the organism. The elimination of iodine should not be excessive at any one period of time, but as far as possible should be uniform. Excretion ought also to continue for a fairly long time, in noticeable quantity, after the last dose has been administered. In all observations a normal activity of the kidney, the chief organ concerned in the elimination of iodine, is essential. As to the commencement of the appearance of the iodine reaction in the urine, there is a marked difference between iodide of potassium and the organic iodine compounds in favour of the former. This can be determined as early as one minute and a quarter after administration, and can be expected on the average within a quarter of an hour. In the case of sajodin it was not detectable in the urine till the second hour; iodoglidine gave indication of its presence in forty minutes. The duration of excretion varies: iodide of potassium is the most rapidly absorbed and likewise the most quickly excreted, while iodine in organic combination reaches the circulation more slowly but stays longer in the system. While a large proportion of the ingested iodine is discharged from the body, a part apparently remains, but of the fate of this we

are not yet sufficiently informed. As regards the production of iodism by various preparations, this seems to depend on the quantity of iodine contained. Thus iodide of potassium contains three times as much iodine as sajodin. Where there is an idiosyncrasy to iodine, iodism cannot be avoided by the use of any preparation. If a rapid action is desiderated we should employ iodide of potassium; if we have mild forms of disease to contend with, then we can have recourse to the iodalbuminates and iodised fats. Of the latter, sajodin has the advantage of being tasteless.

The Chemistry and Pharmacodynamics of Tars, principally from the Point of View of their Use in Dermatology.

Brisson (*Ann. de dermat. et de syph.*, October 1909, Paris) observes that coal tar is an inexhaustible mine for the chemist, but the recent work of Dind, Brocq, and Jambon (see *Edin. Med. Journ.*, May 1909) have assigned it a more prominent position than heretofore as a valuable agent for the cure of certain skin diseases. Tar is the solid residue of an organic substance which has been subjected to destructive distillation in a retort. When this is effected, three very different bodies appear—(1) combustible gases; (2) vapours condensible into watery products, and more or less heavy oils; (3) a hard, dry, black residue-coke. Among the numerous components isolated from coal tar, the variety under consideration, is carbolic acid, of which it contains from one-half to one part in a thousand. According to Jambon, the action of coal tar on the skin depends on two causes—one purely physical, the permeability of tar, the other, the presence of carbolic acid. But it is certain that all its efficacy is not due to this; the proportion is too small. There is likewise a minute quantity of sulphur, but we do not know precisely in what form, though assuredly in one poor in oxygen. Sulphur in presence of chloride of sodium becomes sulphuric acid, and in cases of oozing eczema manifests a dehydrating influence. Quinoleine is one of the ingredients found in largest amount. *In vitro*, this softens keratine, dissolves leucine, tyrosine, fatty bodies, &c. It is to leucol that tar owes its fluidity. Brocq recommends a thick tar, and Brisson agrees. Too thin a tar contains too much leucol and light oils, and is irritating. A thick tar poor in leucol is better borne by the skin. Ethereal alcoholic tinctures are less tolerated than crude coal tar, which contains carbon in suspension. Besides the crude tar there are two combinations which may be usefully employed. One is a varnish of caseine containing half its weight of coal tar. This imparts a coating soluble in water, and not liable to soil the clothes. The second consists of equal parts of coal tar and powdered coke—a soft powder—adhering well and pleasant to touch.

That crude tar is on the whole preferable is supported by the observations of Fox (*Journ. Cut. Dis.*, May 1909, New York), who has experimented with anthrasol, a distillate from tar, made by Knoll & Co. It is a pale yellow liquid, of the consistency of olive oil, with less of the odour of other tar preparations. The cases selected for treatment were subacute and chronic forms of eczema, suitable for tar therapy in general. In most instances a 10 per cent. ointment was used, in a few a 20 per cent. to 25 per cent., and in others equal parts of tar and alcohol. In three cases pix liquida was used for comparison. In two the result was the same, in the third there was a decided advantage in favour of pix liquida. In twenty-three, where oil of cade was employed, four showed no difference, three gave results unfavourable to anthrasol, while in fifteen the difference in favour of oil of cade was most marked. It thus appears that a much vaunted new remedy is decidedly inferior to an old and tried one in the treatment of certain forms of eczema.

The Cause of Erythema Nodosum.

Erythema nodosum is a disease in which the skin eruption is only one of the symptoms. Every practitioner is familiar with the reddish-blue, raised, tender spots on the front of the leg. From the associated joint pains and other rheumatic manifestations, *e.g.* endocarditis, it has been for long considered if not in itself rheumatic, at least very closely allied to rheumatism. Recently another factor in connection with the disease has been brought to light, viz. its frequent association with tuberculosis. Landouzy was the first to propose that, in some instances at least, erythema nodosum was a tuberculous infection. Several observers have since then recorded cases of tuberculosis, especially tuberculous meningitis and miliary tuberculosis, coming on after erythema nodosum. Marfan, in a recent paper (*La presse méd.*, 28th June 1909, Paris), mentions three such cases. With the help of Pirquet's tuberculin skin reaction and Calmette's ophthalmo-reaction we are in a better position than formerly to diagnose early forms of tuberculosis. Marfan tested six cases of erythema nodosum by Pirquet's method, and obtained a positive result in all. Two of these cases had signs of tuberculosis of the internal organs, the other four had not. Chauffard and Troisier (*Soc. méd. des hôp. de Paris*, 1909) report a case of erythema nodosum in which intra-dermic injection of tuberculin gave a positive result, but their case also had pulmonary tuberculosis. Levy-Franckel (*Revue de la tuberculose*, p. 426, October 1908), in five cases of erythema nodosum tested by Calmette's reaction, obtained a positive result in all, and he suggests that it is a condition due to the action of the tubercle bacillus or its toxines on the nervous system, and probably on either the spinal cord itself or its membranes. In support of this opinion, he mentions the fact that in two cases he found a lymphocytosis

of the cerebro-spinal fluid, such as is seen in tuberculous disease; but, on the other hand, this observation is not of much value, as Hutinal has shown that such a lymphocytosis occurs in all the erythemata. He points to the symmetry of the eruption and the pain as indicating the central nervous origin of the disease. Chauffard and Troisier have approached the solution of the question from another aspect. In a case of erythema nodosum they injected tuberculin intra-dermically, and at each point of injection a nodule identical with those of erythema nodosum in character and evolution developed. They think that the skin eruption results from the contact of tubercle bacilli in the circulation with the antibodies which their presence determines at certain points in the body. Marfan injected two of his cases with tuberculin intra-dermically, but the nodules produced were less distinct, less elevated, and of shorter duration than those seen in a typical erythema nodosum. Thibierge and Gestinal have also shown that in cases of erythema nodosum and urticaria bullosa, by injecting tuberculin intra-dermically, lesions can be produced which are identical with those of the disease from which the patient is suffering. They also obtained similar results when antidiphtheritic and antitetanic sera were substituted for tuberculin. Hildebrandt (*Münch. medizin. Woch.*, p. 310, 12th February 1907) injected two guinea-pigs with blood from the vein of a case of erythema nodosum at the height of the disease. Both animals died about six months later with abdominal and thoracic tuberculosis. He claims these results as proof that it is tuberculous in origin. Although the above observations are still very few in number, and much confirmatory work will need to be done before definite conclusions can be reached, the important point to be emphasised is, that cases of erythema nodosum very often but not always show tuberculous lesions either at the time of, or shortly after, the disappearance of the disease, and, as Marfan suggests, it is well to treat all such cases by open air, &c., exactly as other tuberculous patients are treated.

NEW BOOKS AND NEW EDITIONS.

A Text-Book of Experimental Physiology. By N. H. Alcock, M.D., D.Sc., and F. O'B. Ellison, M.D., with a Preface by E. H. Starling, M.D., F.R.C.P., F.R.S. London: J. & A. Churchill. 1909. Price 5s.

In his preface Professor Starling states that the University of London has prescribed a revised syllabus of practical physiology with a view of making the work more in accordance with the actual requirements of the student of medicine, and that this book is an attempt to put the syllabus into practice. We are interested to find that the ground which has been covered by the Edinburgh student for many years past by way of practical work and demonstration in no respect falls short of the requirements indicated here. The book contains instructions for thirty-seven lessons. Some of these can be carried out by the student himself, others form the subject of demonstration. It must be a matter of opinion whether the two can be usefully combined in one volume intended for students' use. We note that the instructions for carrying out the demonstrations, *e.g.* of cerebral localisation, are just as full as those for a practical exercise, such as recording a muscle twitch.

Our chief criticism is that the instructions are just on the meagre side for the student, and perhaps unnecessarily full for the teacher. The book is one which will interest all teachers of physiology, and its concise directions will be appreciated by the junior demonstrator, but the practical instructions in many instances require expansion for the junior student.

On page 1 "A finger touching the inner surface of the abdominal muscles touches peritoneum" is not happily expressed. A student studying his own respiratory interchange is not informed as to the use of the sulphuric acid he expires into, and he is directed to increase his output of CO_2 by running to the *bottom* of the building and back. We know of some excellent physiological laboratories on the ground floor. On page 123 we are informed that Holmgren's wool test succeeds best if both experimenter and subject are slightly thick-headed. Is this cryptic utterance a subtle thrust at a Government department?

We have read the book with pleasure, and can cordially recommend it.

NOTES ON BOOKS.

A sad interest accompanies a survey of the third edition of the *Text-Book of Anatomy* (Henry Frowde) edited by the late Professor Cunningham. A prefatory note states that this is the last work which he undertook, and that in spite of failing health he laboured up to the end at the planning and revision of the new edition, and the preface was drafted by him only a few days before he died on 23rd June 1909.

The new edition contains many alterations and additions in the sections of osteology and of myology, which add to the value of the work, and render these sections authoritative and comprehensive.

The printing of the new illustrations is not on the whole so satisfactory as it might be. This is obvious in the illustration of the deep muscles of the back, on page 388.

This is the only remark that requires to be made in criticism, and is only a small matter, for the whole work in text and illustrations represents a very high standard throughout in completeness, accuracy, and breadth of presentation of the subject of human anatomy.

The evolved product of sixteen editions surely needs no greater commendation than the statement of the fact that it is such, and the latest edition (16th) of *Gray's Anatomy* (Longmans) may at once be said to be at least as high in standard in relation to our present knowledge as were its predecessors in their time. The additions and alterations consist of an enlargement of the section dealing with applied anatomy, and the addition of some two hundred illustrations.

The size of anatomical text-books increases with each successive edition—the price, fortunately, does not show the same tendency—and it must surely be with a sinking heart that the medical student first dips into such ponderous tomes, and meditates on the necessity of acquiring all the information which they contain. Nor will his feelings grow more cheerful as he continues his studies, until he realises that he will not be expected to be a master of the whole subject of anatomy. But surely the time has arrived when this fact should be recognised, and some indication given to the student of what is expected of him at examinations, and of what is not, at present, needed.

Gray's Anatomy has always been conspicuous in containing a good account of embryology and of histology, in addition to the descriptive anatomy of the human body. There can be no doubt of the utility of having these two subjects, inseparable from anatomy as they are, in the same cover, and the excellence of the way in which they are treated adds still further to this. Professor Howden and his

collaborators may be congratulated upon the issue of this new edition, which is so thoroughly well revised and illustrated.

The new (eleventh) edition of *Quain's Anatomy* (Longmans) is being issued in parts, of which two have already been noticed. The third part, now issued, deals with the peripheral nerves and the organs of special sense. Like the other parts, it shows the wealth of excellent illustration which forms so useful a feature of the new edition.

In "Quain" we expect to have a fuller and more scientific account of the subject than in other text-books of anatomy, and the authors have produced a work which is thoroughly up to the reputation of former editions. "Quain" forms a text-book far beyond the student's needs for examination purposes, but it should find a place in every medical library as a work of reference.

Great care has been taken to bring the description of the spinal nerves, in their segmental distribution to skin and to muscles, up to the level of the most recent knowledge.

The accounts of the minute structure of the sense organs are full enough to satisfy the practitioner who specialises in their pathological conditions, and one cannot fail to admire the beautiful illustrations from Professor Symington's specimens of the relationships of the ear and mastoid antrum to surrounding parts.

Books on Dietetics.—To the fourth edition of *Practical Dietetics*, by W. Gilman Thomson, M.D. (Appleton & Co.), we can accord unstinted praise: alike in subject-matter and arrangement there is little room for criticism.

The author is to be congratulated upon having most thoroughly and successfully brought his book up to date, and, as it now stands, it must hold a foremost place among its very numerous contemporaries on the same subject. One criticism we have to make—the index is rather short. Doubtless this is largely compensated for by the very lengthy table of contents, though we cannot but think that in a book of this size a very complete alphabetical index is also necessary.

Diet in Health and Disease, by Julius Friedenwald, M.D., and John Ruhrah, M.D. (W. B. Saunders Co.), is a carefully thought-out book, redounding to the credit of its authors, and has the advantage, through its dual authorship, of treating of conditions in early childhood at first hand. We can, however, discover no marked originality either in the treatment of the subject or in the manner of its presentation, and we cannot but incline to the opinion that the practical value of the work has, to some extent, been sacrificed in the endeavour to include a very large amount of statistical and tabular information, some of which is of purely scientific interest, and much of it as yet unfit for inclusion among the "facts" of science.

Food and Health, by A. E. Powell, Lieutenant, Royal Engineers (Methuen & Co.), is an excellent book when consideration is had to the

obviously extremely biassed attitude of the author towards the subject. It is interesting to learn that Lord Charles Beresford is a vegetarian, but that such a fact should be brought forward as a reason for embracing the tenets of vegetarianism may be questioned not only by medical men but by many distinguished members of that laity for whom the author writes. "Food and Health" is a wide subject, and we may be excused if we suggest to the author that should the evangelistic spirit which evidently animates him stimulate him to produce a second edition of his work, in the interests of hungering humanity itself a more satisfactory title would be *Vegetarianism—The Golden Rule for Health.*

Pulmonary Tuberculosis and Sanatorium Treatment, by C. Muthu, M.D. (Baillière, Tindall & Cox), is something more than the ordinary sample of verbose booklet on the methods and value of sanatorium treatment to which we are becoming so accustomed, and the author is to be congratulated, not only on the matter of his book and on the manner in which it is put before us, but also on the somewhat unusually—in a book of this type—just sense of proportion as regards the subjects dealt with, which he discloses.

The book is divided into three parts, and it is stated in the preface that "the first part of this book attempts to deal with the scientific aspect, the second the sanatorium, the third the social aspect of tuberculosis." The first part provides interesting reading, and in some places is almost refreshingly heterodox. With much of what he says with regard to the effect of environment and nutrition on the evolution of specific bacterial forms we are in entire agreement, although we certainly contend that his views are carried to an extreme—if logical—conclusion as regards his definition of what constitutes "tuberculosis."

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

THE Quarterly Examinations of the above Board, held in Edinburgh, were concluded on 21st inst., with the following results:—

The following candidates passed the First Examination:—

Rastamji Ratanji Dadina, Bombay; Armitage Edward Frederick Litton Forbes, France; Louis Lazarus, Natal; William Ashworth, Halifax, England; Prayag Deb Banerji, Allahabad; William Neville Pennant Williams, Holywell, Flints; Pasupulet Krishnasamni Kuppuswami Naidu, Madras; Nallamma Williams, Ceylon; Gwilym Llewelyn Pierce, Llangollen; Arthur

Barclay Bull, Cape Colony; John Hague Cooper, Lancashire; and James Calder, Lanarkshire: and 9 passed in Physics, 3 in Biology, and 4 in Chemistry.

The following candidates passed the Second Examination:—

Matthew M'Lintock Bainbridge, Roxburghshire; William Brennan, Co. Clare; William Austin Reardon, Rangoon; Walter Chapman, British Guiana; Mary Winnifred Doran, Magheradin; Willoughby Edward Dellew Briggs, Rochdale; Jamshed Hirjibhoy Appoo, Bombay; Michael Patrick Power, Co. Cork; Joseph Burnett Wilman, England; John M'Cagie, Edinburgh; John Scott, Scotland; John Hegarty, Belfast; William Arthur Rees, Wales; and Percy Ward Laidler, Gateshead; and 8 passed in Anatomy and 3 in Physiology.

The following candidates passed the Third Examination:—

George Francis Hegarty, Cork; Edwin Charles Allan Smith, Ballary; Ernest Layton Matthew, Corstorphine; Alexander Edward Mackenzie, India; Furdon Framji Keravalla, India; Isaac Joseph M'Donough, Melbourne; Harry Russell-Macnab, Co. Down; William John Herbert Davies, Liverpool; Hamilton Mathewson, Co. Tyrone; Farquhar Murchison Stewart, Portree; Robert Warrenne Dale Hewson, Cheshire; Michael Joseph Ahern, Co. Kerry; Alfred Meares Billings, Birmingham; Rastamji Ratanji Dadina, Bombay; Badrinath Varma, India; Magandal Maneklal Daru, Bombay; Framroze Limji Bhajiwalla, Bombay; and Triloki Nath Sinha, Benares; and 1 passed in Pathology and 5 in Materia Medica.

The following candidates passed the Final Examination, and were admitted L.R.C.P.E., L.R.C.S.E., and L.F.P.&S.G.:—

Bikrama Jit Salmi, India; John Young, Newcastle-on-Tyne; Angus Alex. Campbell, Canada; Ishmael Charles Pratt, Sierra Leone; Samuel Henri Siung, British Guiana; William Tregea, Birmingham; Geoffrey Milburn Hart Osborne, New Zealand; Badrinath Varma, Allahabad; Saravaiya Amritaraj Chetti, Bangalore; George Walter Rundle, Australia; Charles Langley Levers, Co. Clare; Noshir Shapoorji Bhedwar, Bombay; Manakshy Empermal Naidoo, Madras; Everard Allan Sigismund Carrington, Barbados; Ampattu Thomas Kuriyan, Travancore; Edward Peake Maitland, India; Joseph Henry Bennett, Co. Cork; Robert William Axon Brown, Chester; and Vincent Denis Griffen; and 16 passed in Medicine and Therapeutics, 3 in Surgery and Surgical Anatomy, 17 in Midwifery, and 20 in Medical Jurisprudence.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES AND NEWS.

A Hundred Years Ago. In these days, when the claims of arsenic and its organic compounds in the treatment of syphilis are so persistently urged upon us by enterprising and ingenious manufacturers, it is interesting to cull from the pages of the *Edinburgh Medical Journal* for the year 1810 the following extract. It appears in a paper "On the Effects of Arsenic, by G. N. Hill, Surgeon":—

"*Syphilis.*—Few diseases of an equally terrible nature owe so much to medical skill as syphilis. The improved treatment now so universally established, has greatly contributed to disarm this cruel hydra of many of its horrid heads; still there are too many left, the obstinacy of which occasionally renders existence burdensome, or forms the first irrevocable step towards an untimely grave. I allude to those cases, where the common remedy seems to have lost its power over the enemy, or some untoward symptom exists, which is manifestly aggravated by continuance in the use of mercury. Precisely under these circumstances, arsenic is found to confer great advantages, affording very commonly a resource, as much to be depended upon as its great precursor was in the more early and less obstinate stages of the complaint. Ancient syphilitic ulcers, whether of the skull, tibia, or sternum, in the throat, nose, &c.; exulcerated, degenerated buboes, and cutaneous eruptions, of long standing; the excruciating pains of the limbs, forcing the wretched sufferer from a wearisome bed, at the midnight hour; exostosis and node; the anomalous syphilitic or mercurial fever; will all generally yield to arsenical remedies; with nitric acid in a decoction of the woods, cinchona, and occasionally opium: I add occasionally, because in a majority of cases, the anodyne effects of arsenic render its constant use unnecessary."

This simple statement might, so far as our experience and reading enable us to judge, stand as a summing up of the already voluminous literature on the modern arylarsonates in the treatment of syphilis.

Medical Inspection at Dunfermline. The Fourth Annual Report of the Medical Officer of the Carnegie Dunfermline Trust has just been issued. The principal points of interest are the appointment of a School Nurse in the beginning of the year, and the recent decision of the trustees to establish a School Clinic. To the

latter we referred in our last issue. The nurse, besides assisting at the medical inspection of the children, visited many of the homes, and also gave two courses of lectures to parents. Visits were paid to the homes of those children who were reported to be in need of treatment, and were largely instrumental in influencing parents to seek advice from their own doctors. The lectures proved very popular, and the attendance of the parents exceeded expectations. It is intended to repeat them in other schools at a later date.

The question is still sometimes asked, what good is likely to come from medical inspection? Dr. Bridge in his report tells us, what Dr. Kerr has already affirmed of the London children, that there is quite a noticeable improvement in cleanliness, and that this is particularly the case with respect to the children's heads. There is still, however, room for improvement, and in this direction the work of the School Nurse is proving invaluable. No improvement has taken place in the condition of the children's teeth, although perhaps a few more make some use of a tooth-brush.

An interesting extension of the work of the medical inspector is suggested by Dr. Bridge in the case of the older children. These are examined shortly before they leave school, and Dr. Bridge has been making inquiries as to what they intended to do after leaving school. In the majority of cases the children have no definite plans. They have not even any idea of what they wish to do. This is, of course, unfortunate, as the children are likely, when they leave school, to seize the first opportunity which presents itself of making a little money, not only irrespective of whether they are suited physically and mentally for the work, and also irrespective of whether the work itself is worth doing, or is a kind of "blind-alley" employment which leads nowhere. Dr. Bridge points out that the medical examiner can often give assistance to such children, in some cases by suggesting an employment, in others by warning a child against certain kinds of work for which he is unfit. He further suggests the advantage of the establishment of a Children's Labour Bureau in connection with the Medical Inspection.

Retiral of Dr. M'Bride. It used to be the custom and the ambition of all professional men in Edinburgh to die in harness. Of recent years, however, there have been many notable exceptions to this custom. The late Dr. Argyll Robertson retired to Jersey many years before he died. Sir Alexander Simpson resigned his chair, and has applied his unabated energies in other—some of them unexpected—directions, and Prof. Chiene is enjoying a peaceful life at Barnton.

Dr. M'Bride's retiral came as a complete surprise to most. He was appointed Surgeon to the Ear and Throat Department of the Royal Infirmary while very young, and though he held office there for twenty years the time limit came into operation when he was not very much

older than many of his colleagues at the date of their promotion to the full staff. He has now decided to locate himself where he will have greater facilities for pursuing his favourite sport of hunting, and we understand will divide his time between Harrogate and Devonshire.

His former clinical assistants gave him a "greetin'" dinner on 28th January, when the chair was occupied by Dr. R. H. Blaikie, the first to hold the office.

Among those present were Drs. M'Kenzie Johnston and Logan Turner, his successors in the Infirmary, and ample testimony was borne to the great advances which Laryngology in Edinburgh owed to M'Bride.

He began the work in a small room, seeing patients twice a week, and now his successors have a well equipped special hospital, an *imperium in imperio*, for the Ear and Throat Pavilion of the Royal Infirmary will compare favourably with any hospital in the Kingdom.

His many friends wish him long life, vigorous health, and many masks and brushes to adorn the halls of his new homes.

Radium.

We think it well to warn our readers not to believe all that the advertisements say about the effects of radium. In the Radium Institute of Paris Dr. Wickham is doing most interesting and promising work. Some of this we have been privileged to see, and in some conditions the good effects are undeniable. But the amount of radium available for use in the Paris Institute is valued by thousands of pounds, and the results there achieved must not be expected when an infinitesimal quantity valued at twenty or thirty pounds is all that is available. Yet, no doubt quite inadvertently, such expectations are aroused by some of the advertisements, and much disappointment is inevitable. Before long the Royal Radium Institute in London will be in operation, and medical men in this country will be able to judge the results for themselves: before long, too, we hope to see radium at a price considerably below its present ridiculously high figure, and available in working quantities in all our large centres.

In the meantime, we would advise our readers not to waste money on quantities which cannot reasonably be expected to do any good, and to turn their attention instead to the uses of carbon dioxide snow, which can undoubtedly cure some of the conditions for which radium is specially recommended, and can be had for next to nothing.

The Late Dr. Constable.

By the death of Dr. Constable of Leuchars, Scotland has lost another of the older type of medical practitioners. He was a most worthy man, idolised by all his patients in Leuchars and for miles round it, where he conducted an extensive practice. He never spared himself either in work or

play. Full of humour and pawky wisdom, he was a delightful companion and enjoyed the friendship of several of the older Edinburgh men. Littlejohn, George Balfour, Joseph Bell and he formed a little club which had only one function, that each member should welcome each other by a cabalistic word.

He did not long survive his retirement.

ANOTHER well-known Fife practitioner has gone to his rest. Spence, of Burntisland, for so everyone knew him, was at his work as usual a few days ago, and took ill while actually on his rounds.

For nearly forty years he went in and out among the people of Burntisland and Aberdour, and in his time saw many changes in his surroundings.

Though the last years were much saddened by bereavement, Spence always kept up a cheery attitude to the outside, and many of us will much miss his hearty greeting.

His two sons, both graduates in medicine, predeceased him, and there is no more a Spence of Burntisland.

Appointments.

MR. J. W. STRUTHERS has been appointed Surgeon to Leith Hospital, *vice* Mr. Alexander Miles, resigned; and Mr. D. P. D. Wilkie has been appointed Assistant-Surgeon.

Mr. Cuthbert B. Paul has been appointed Assistant-Surgeon to the Royal Hospital for Sick Children, *vice* Mr. E. W. S. Carmichael, resigned; and Mr. Lewis Beesly has been appointed Assistant-Surgeon to the Chalmers Hospital.

Dr. J. F. Christie has been appointed Physician for Diseases of the Skin, and Mr. Peterkin, Surgeon for the Diseases of the Ear and Throat to the Aberdeen Royal Infirmary.

MILK SUPPLIES FOR LARGE TOWNS.[1]

By JOHN ROBERTSON, M.D.,
Medical Officer of Health for Birmingham.

THE extraordinary concentration of people in towns is of relatively recent origin, and, so far as the milk supply is concerned, has made it necessary for an entirely different type of supply to be provided from what formerly sufficed.

We can still see in the country the methods which were universal in bygone days. The wealthy and middle-class householder kept his cow or cows, and supplied the rest of the people in the neighbourhood with milk, the milk being fetched by children, who, if I remember rightly, had to be in good time or they got none. Everybody got the milk fresh, if at times the quantity was scanty.

The expression "sweet milk" is one which is used in Scotland only, and is a very good description of the difference which exists between fresh milk of the country and the more or less stale milk which one gets nowadays in the towns. With such a supply the risk of contamination was relatively small, and the need for regulation was very much less than it is at the present time.

Compare these conditions with the arrangements that are in vogue for the supply of large towns with milk to-day, and the difference is found to be very great, and to have a medical aspect which is of real importance. Much of the milk now sold passes from the producer through the hands of one or two dealers before it reaches the distributor. These dealers purchase from the farmers at the lowest price, and want of combination among the farmers enables the dealer to keep down the price, with a result that the farmer, in many cases, has to study carefully how to produce the milk on the cheapest food and the smallest amount of it. Having received the milk from the farmer, it is bulked, that is mixed together, so that it shall be of uniform quality. Often the dealer finds that by adding old separated milk he can still sell something which satisfies the public analyst.

Formerly these dealers and milk retailers used preservatives very largely, but now that these are to a considerable extent

[1] An address to the Edinburgh and Leith Practitioners' Association.

vetoed, he resorts to cold storage for preserving any excess of milk left on his hands. The larger supply required for week-ends is almost entirely obtained from cold storage.

The practical effect of this comparatively new trade in supplying towns with milk is that farmers have given up the making of butter and cheese for the more profitable one of supplying milk. The number of dairymen who have no grass land of their own is in many towns considerable. The distance between the farm and the place of consumption is very great, the interval between the milking of the cows and the consumption of the milk is so long, and the liability to contamination in transit and handling so great, that milk which formerly had few dangers attached to it has now got many.

Some of us here may remember the gentleman who first described a milk-spread epidemic. The description is to be found in the *Edinburgh Medical Journal* for 1858, p. 993 *et seq.* I have recently taken the trouble to look up some of the monumental works which have recently appeared in Germany, France, and America, and find that all recognise Dr. Taylor's description as the earliest. Since 1857 there have been thousands of outbreaks described as due to milk. This fact is interesting as showing the great change which has come over the method of supply within the past fifty or sixty years.

We are at present driving out from the towns the few milk producers we have, and are gradually deriving our supplies from greater distances every year. How great these distances may be is shown by the addresses on the milk churns on the railway platforms in London. Quite a considerable quantity of milk supplied to London comes from the south of Scotland, another quantity comes from the north of Ireland, while a very considerable quantity is derived from Somersetshire, Dorsetshire, and Devonshire.

This great change in the milk supply has not been accompanied by adequate means of control, so that we have now got a supply of milk which we cannot regard as entirely free from risk. There is hesitation on the part of the medical profession and on the part of the general public to use unboiled milk freely. There are real grounds for this hesitancy when we know that from 7 to 14 per cent. of all the milk sent into our great cities contains the living germ of tuberculosis, that much of the milk contains dirt of an objectionable character, and that occasionally the milk is infected with pathogenic germs. Milk which

will not keep for more than twelve hours is bought with some hesitation, and probably is therefore used more sparingly.

All these things militate against the freest use of good milk. Personally, I believe we should use milk much more largely than we do at present, and in advocating reforms in the milk supply, we have not only to take care that the reforms are really necessary, but that nothing is done which will raise the price of milk to a point which will make it a prohibitive food for our large artisan classes. Cow's milk is, I believe, the most important food we possess, and it is the main article of diet for a large number of young children. It is the only food for the increasing number of infants whose mothers either cannot or do not suckle them.

I believe that every great advance in the health of the people has had its origin in the observations of the medical profession, and I feel very strongly that at the present time it is necessary for us, as a profession, to realise clearly what is wrong and how it can be remedied. All of us act as educators of public opinion in such health matters.

By far the most important of the reforms necessary are at the milk producers' premises. In Scotland, as a whole, the farm buildings are better than those in the majority of English districts, but even here the type of buildings varies very much in different localities. In many instances nothing more than somewhat small structural alterations are needed. On the other hand, nothing short of the entire rebuilding of the cow byres can remedy the conditions existing on other farms. I would go the length of saying that on the majority of farm premises considerable expenditure is necessary to bring the buildings up to the reasonable requirements of modern sanitation.

The dairy farmer is, as a rule, a man with small capital, nearly all of which is invested in his herd. He rents his farm from a landlord, who, in the majority of cases, cannot afford to have the improvements necessary carried out, and who will, if pressure is brought to bear on him, either do the work badly or take steps to prevent his farm being used as a dairy farm. It is not possible to judge of the condition of farming in this country from that which maintains in the Lothians. I think I am not far wrong in maintaining that the majority of land occupied by dairy farmers does not bring in more than 2½ to 3 per cent. interest.

As the law stands at the present time, the dairy farmer is required to bear the whole expense of bringing his farm premises

up to the requirements demanded, and owing to the fact of his being a man of small means, little can be asked of him.

To my mind, the great and outstanding defect in both the Scottish and English Milk Bills of last session was the fact that in neither of them was any provision made for assistance to the farmer in the directions of loans for short periods for carrying out the necessarily costly work of alterations or rebuilding. Loans are now granted under many Acts of Parliament for setting up good conditions of agriculture among the small farmer class, and I feel strongly that in the case of the dairy farmer some such inducement must be offered to him or his landlord, so that the public may get the best possible milk supply. The cost of these loans to the public is exceedingly small. The loan is usually paid off in ten or fifteen years, and I feel that money invested as suggested would be productive of great good.

Having obtained the power to compel alteration on the easiest possible terms for both landlord and tenant, there still remains the great difficulty as to the authority who is to enforce the regulations which will bring about a good supply of milk. In the majority of cases district councils have entirely failed up to the present. I can give you many instances of councils adopting regulations for byres for the sole reason that by so adopting regulations which they do not intend to carry out they are freed from pressure put on by the Central Government. In England many of the small rural district councils are entirely made up of dairy farmers, the greater proportion of whom are among the most conservative gentlemen in the world. But be the district councils good or bad, I think everybody who has looked into the question is agreed that their districts are too small in area and rateable value for the councils to be able to avail themselves of the whole-time services of veterinary officers and others who will give really sound and good advice to farmers, and also see that sound regulations are enforced. Personally, I think that the County Council is the proper authority to carry out such regulations.

The method of reconstructing dairy buildings must, of course, vary at different premises. There are, however, some general principles which I would like to mention briefly.

The byre must be airy and as well lighted as a living-room in a dwelling-house, with good floors, and a good arrangement of the cows. It has been proved that cows will give as large an amount of milk, and milk of as good quality, when kept in well-aired and

well-lighted sheds as when kept in dark warm premises. The experiments carried out at the Harper Adams Agricultural College at Newport, Salop, proved this beyond a doubt. Further than this, the splendid work of Mr. John Spear, a report of which is printed in the *Journal of the Highland Agricultural Society*, vol. xxi. page 255, gives contradiction to the old accepted doctrine that a dark ill-ventilated cowshed with cobwebs hanging from the roof is the place in which milk of rich quality can be produced.

The sanatorium method of dealing with cows has been tried in a good many districts of England with great success. In view of the prevalence of tuberculosis among herds of cattle, I think it is well to bear it in mind in housing cattle. In most of the Scottish dairy farms the dung-pit is a phenomenon which strikes the attention of the sanitarian. It is far too near the cowshed and the dairy.

Hundreds of dairy farms have an entirely inadequate supply of water, and money will have to be spent in increasing the supply from wells and in the provision of storage for water, so that it may always be available for use in cleansing milk vessels, the byres, and the hands of the milkers. Every dairy premises requires a room apart from the farmer's dwelling-house where dairy utensils can be properly cleansed. In addition, there must be a means of cooling the milk. In a great many farms there is no reason why a supply of ice should not be stored locally for use during the hot months of the year. This is the general custom in Denmark.

These are the main alterations that are required as to the farm buildings and as to the authority supervising the production of milk. But the farmer must be charged with certain other responsibilities. His herd must be kept free from disease, it must be fed properly, and the milk must be properly handled.

The only ailment of dairy cows that I need deal with to-night is tuberculosis. According to the latest return of the Board of Agriculture there are about 2,200,000 cows in milk in this country, and, judged by the results of tubercular tests on about 20,000 cattle, it may safely be said that 30 per cent. of dairy cows are now suffering from tuberculosis in one form or another. I do not know how many of these cows would give living tubercle bacilli in the milk, but as the result of many testings of milk sent into Birmingham and Sheffield, and the published returns from other large towns, it may be said that rather less than 10 per cent. of all the churns of milk contain tubercle bacilli, which when given to guinea-pigs will set up typical tubercular lesions.

If any evidence is necessary as to the virulence of such milk, I would ask you to look at the returns of tubercle in young pigs slaughtered in our south of England slaughter-houses in the dairying districts. In these districts a large amount of separated milk cannot be disposed of for any better purpose than the feeding of pigs. Given unboiled to young pigs it is most successful as a fattening substance, but most disastrous in its power of conveying tuberculosis to the animals. I frequently see whole litters of porkers extensively tubercular, seven, eight, or nine pigs, all of the same age and killed on the same day, having well-marked tubercular disease. The boiling of this separated milk is thought to decrease its value as a food for the pigs.

During the past ten years I have given a good deal of attention to the eradication of tuberculosis among dairy herds, and as the result of what has been done in this country and in many foreign countries I have no hesitation in saying that tuberculosis can be and ought to be entirely eradicated from dairy herds. I need not to-night dwell on the various methods of eradication, other than to say that with so widespread an infection as we have in England the liability to reinfection of a clean herd is very considerable, and therefore must be disappointing when it does occur. We are getting a considerable number of farmers in the Birmingham district to agree voluntarily to free their herds under the following conditions:—

(*a*) The scheme to apply only to cowsheds situate within ten miles of the city, and from which milk is sent to Birmingham, with the additional limitation that it shall only apply to sheds suitable for the purpose.

(*b*) The Corporation to supply free of charge the necessary tuberculin and veterinary assistance for the testing of the cows twice annually, and also the necessary veterinary assistance and advice in carrying out the scheme.

(*c*) The farmer to undertake to separate the diseased from the healthy cows, and to gradually get rid of the diseased animals. Wasters and cows with tuberculosis of the udder to be dried off and sold for slaughter.

(*d*) The farmer to permit the marking of animals free from tuberculosis by means of a lead button on one ear.

(*e*) The farmer to carry out the necessary disinfection after the removal of an infected cow from the shed.

(*f*) A certificate to be issued quarterly to those farmers who keep their herds free from tuberculosis as follows:—

Quarter ending .

I hereby certify that on behalf of the Corporation of the City of Birmingham I have visited the farm occupied by and examined the cows and farm premises. I found that proper precautions were being taken to keep the cows free from tuberculosis, and that they were housed under hygienic conditions.

This certificate must not be used after 19 .

(Signed) .

Veterinary Superintendent to the Corporation of Birmingham.

(*g*) A list of farms at which the cattle are being kept free from tuberculosis to be printed and supplied to any person in Birmingham who desires such list.

NOTE.

1. Pending the time when the herd shall be entirely free from tuberculosis, reacting animals, except those having tuberculosis of the udder, may be kept and milked with a view to the most profitable use being made of them before they are disposed of.

2. Cows purchased to replace infected stock should be bought with a veterinary certificate to the effect that they have been tested within a month and found not to react to tuberculin, or they should be bought subject to their being returned if they react to the test. Until tested they should be kept in a shed by themselves.

3. It is probable that two or three years will be occupied in freeing the herd from tuberculosis unless the farmer chooses to immediately sell reacting animals, which would eliminate any risk of infecting the healthy, but would be likely to entail some loss.

The advantages of such a scheme will be :—

(*a*) There will eventually be a supply of tubercle-free milk to Birmingham from cows kept under hygienic conditions.

(*b*) Even during the preliminary stage, when the farmer is freeing his herd, there will be a great improvement in the condition of the cattle and of the sheds at most of the farms.

(*c*) To the farmer the advantage will be that he will obtain free of charge the necessary veterinary assistance and advice to enable him to free his herd of diseased animals, with the result that he should get the best price for his milk, and will be spared the loss which he now sustains from the wasting of tubercular cattle.

(*d*) To the butcher there will eventually be the advantage of being able to purchase even old animals with a knowledge that they are free from tubercular disease.

Against these advantages there must be set :—

(*a*) The probable slight increase in the price of milk to the consumer for some years to come.

(*b*) There will be the cost of the veterinary assistance to the Corporation.

(*c*) To the farmer there will be the necessity of exercising constant vigilance to prevent reinfection, and during the period that he is clearing his herd there will be some inconvenience and a certain small expense.

The Corporation pays the cost of the veterinary assistance, while all the rest is borne by the farmer. His share in the work largely consists of extra watchfulness and trouble for a few years, and perhaps a loss on the sale of tubercular animals. His gain is that he gets a better market for his milk, and that in the near future he will probably get a better price for his old cows from the butcher, who at present buys with the knowledge that a large number of the animals are tubercular. Nowadays most of the farmers sell their cows at six or seven years of age, after they have had three or four calves. The Danish farmers have found that when they are sure of the absence of tuberculosis it is profitable to keep good milkers for ten or twelve years, and thus get not only a good milk yield, but also three or four additional calves from a good milking strain.

To effect any real reduction in bovine tuberculosis we must establish an efficient public health veterinary service of men, trained very much on the same lines as medical officers of health. Such a service has been suggested in the Milk Bill of last session, in which it is provided that the cows in each dairy should be inspected at least once a year by a veterinary surgeon. In the city of Birmingham we ask for a monthly examination of all cows, and find that this is in practice necessary.

In dealing with bovine tuberculosis I think we must treat the farmers liberally in the direction of compensation for the slaughter of animals found to be diseased during the early years of the process of stamping out. No farmer retains diseased animals wilfully for his own benefit, but there is no use attempting to eradicate tuberculosis if the hovels of cowsheds which now exist in some parts of the country are allowed to remain, so that in my opinion the improvement of the cowsheds must precede the establishment of a service to get rid of bovine tuberculosis.

One or two other things are required of the milk producer. He must conduct his business under scrupulously clean conditions, such as the wiping of the udders before milking, washing of the hands before milking, the wearing of overalls, the proper straining and cooling of the milk, and the effective cleansing of milk

vessels by scalding. The middleman and distributor require to exhibit equal cleanliness.

In Copenhagen, where, I suppose, the finest supply of milk in Europe is to be found, the question of cooling is regarded as a very important one. The milking pail has an ice chamber at the bottom, so that immediately the milk is delivered into the pail it is cooled. The churn is further cooled by being placed in a tank containing ice, it is forwarded by rail in cooled railway vans, it is filtered through gravel, and is then bottled and distributed. Such milk has a flavour which makes it appetising and entirely different to the milk one gets in our large towns.

I have suggested that certain public money should be expended in granting loans for rebuilding dairy farm premises, that public money should be expended in compensating for the slaughter of tubercular animals, and also for the provision of an adequate service to look after the milk supply, and I do this because I think that unless we help the producer financially we shall not get the reforms which we desire to be carried out.

The question then arises as to whether all this expenditure is necessary. I do not know what number of infants die annually as the result of consuming infected milk, but it must be considerable. If we take such a disease as tuberculosis, it is probable that no Royal Commission will ever be able to get direct proof that bovine tubercle causes tuberculosis in the human infant, but while this is so, the indirect evidence is so great that I think the finding of the last Royal Commission is justified, viz., "There can be no doubt that in a certain number of cases the tuberculosis occurring in the human subject, especially in children, is the direct result of the introduction into the human body of the bacillus of bovine tuberculosis: and there can also be no doubt that in the majority, at least, of these cases, the bacillus is introduced through cow's milk. Cow's milk containing bovine tubercle bacilli is clearly a cause of tuberculosis, and of fatal tuberculosis in man."

I need not refer to the local outbreaks of typhoid fever, scarlet fever, or diphtheria spread by milk. I am convinced in my own mind that certain conditions of sore throat and also certain outbreaks of scarlet fever are due to udder disease in the cow, and that these can be, as a general rule, quickly and easily prevented. I have now had many such outbreaks to deal with, and have always found that they ceased immediately the milk from the affected cows was stopped from being used.

But, after all, these particular diseases conveyed from cows to the human subject through the agency of milk are trivial in their

harmfulness compared with the amount of disease amongst young children caused by dirtiness of the milk. I had thought of bringing forward to-night some tables showing the number of organisms which have been found in our Birmingham milk supply at various times of the year, and in various parts of the town, but having recently seen a cartoon in *Punch* where a Socialist speaker was hurling at his audience figures of millions, I have hesitated, and will only say that in the town we can count the organisms in milk by the million per cubic centimetre, that the taste of milk is largely influenced by the growth of organisms, that its power of disturbing the digestion of young children is mainly due to the germs it contains, and until we can get an assurance of better means of production I have no hesitation in recommending for young children that milk should be boiled—a recommendation which I dislike making intensely, as I am quite certain that fresh milk is better than that which has been boiled. Clean town dairies decorated at great expense will never alone give us a wholesome supply. The main reforms are needed at the cowhouse and country dairy, and in improved methods of transit, so that milk shall reach the consumer as soon as possible after leaving the cow.

No record of the dangers which exist at present from milk supplies is complete without mentioning the damage which milk receives at the present time in the smallest class of dwelling-house occupied by the poorest of the people. In the city of Birmingham and in Sheffield practically the whole of the deaths of infants from summer diarrhœa occur among that half of the population living in the smallest dwelling-houses. In Birmingham this is very marked from year to year. We have one-half of the population practically without a single death, while among the other half during hot summers a thousand or more deaths occur. To a very large extent the same milk supply goes to both groups of houses, so that, practically speaking, it is the careful handling and storing of the milk in the dwelling-house which prevents these deaths in the better class of dwellings.

The medical profession can do and is doing a very great deal in the direction of educating public opinion with a view to getting a better supply of milk. Pending legislation, which I think is bound to come, probably by steps, it is desirable to encourage, as far as possible, those dairymen who are keeping model farms and paying attention to the healthiness of their stock and the cleanliness of the premises. Such dairies are now to be found in and around all our large towns, and if they are successful other farmers will soon be encouraged to follow the example.

THE BLOOD-PRESSURE IN ANÆSTHESIA.[1]

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and

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It may be said that the effects of an anæsthetic on the circulation are of little importance unless the blood-pressure is altered, and that any disturbance of the blood-pressure caused by an anæsthetic is an effect of much moment, well worthy of careful study. An anæsthetic which affects the blood-pressure but slightly is *cæteris paribus* to be preferred to one which affects it more. If we disregard the effects of circulating toxins or of other disease, and the effects of interference with respiration, either accidental or incidental to the operation, the possible effects of anæsthetics on the blood-pressure may be stated as follows:—

The blood-pressure may be *lowered* by:—I. Depression of the heart: (*a*) from vagus inhibition, either by direct stimulation of the centre by the drug, or by reflex stimulation through afferent nerves; (*b*) by weakening of the cardiac muscle. II. Dilatation or paralysis of the blood-vessels.

The blood-pressure may be *raised* by:—I. Stimulation of the heart: (*a*) by excitement; (*b*) by stimulation of the heart by the drug. II. Stimulation of the vaso-motor centre: (*a*) by the action of the drug; (*b*) by asphyxia.

During anæsthesia there may be a loss of that co-ordination between the action of the heart and the tone of the arterioles, which compensates for the effects of such factors as the action of gravity on the circulation, sudden changes of posture, or muscular effort.

The objects of the present research have been:—(1) To observe and compare the effect of the administration of various anæsthetic agents on systolic pressure. (2) To note any variations in the effect produced by different methods of administration.

[1] Communicated to the Edinburgh Medico-Chirurgical Society, February 1910.

(3) To ascertain the conditions favourable to the production of the minimal disturbance of systolic pressure during the induction of anæsthesia.

The following agents have been employed:—(1) chloroform: (2) ether; (3) nitrous oxide: (*a*) rebreathing, (*b*) with valves, (*c*) preceded by oxygen; (4) nitrous oxide and ether in sequence; (5) ethyl chloride; (6) gas and ethyl chloride in sequence; (7) oxygen, gas, and ethyl chloride in sequence.

The operations, save those done with chloroform and ether, were dental, and the patients were seated.

The instrument used was Martin's modification of the Riva-Rocci sphygmomanometer. We found it a great advantage to cover the armlet with cloth to prevent over-distension of the bag; and a further improvement was effected by employing a foot-bellows to inflate the bag. This left the observer with both hands free to manipulate the instrument and record results while the bellows with an air reservoir gave a very steady increase of pressure. All the readings were taken from the brachial artery.

One of us (H. S. R.) palpated the pulse and indicated the moment when it became obliterated. Another (A. G.) inflated the bag and recorded the pressure and the time at the moment of obliteration, the time being called by a student every 5 seconds after the application of the anæsthetic. The third observer (W. G.) conducted the administration and noted the other effects on the patient.

More frequent observations were made than are recorded in the following tables, but the 20-second intervals (30 seconds in the case of chloroform) sufficiently indicate the course of the variations.

Chloroform.—By the kindness of Mr. Stiles we were enabled to carry out these observations at the Chalmers Hospital. Chloroform was administered by Dr. D. C. A. M'Allum. The systolic pressure was read before the anæsthetic was begun, and subsequent observations were made as rapidly as possible until full surgical anæsthesia was complete. In the following tables the first column under the time stated indicates the actual reading in mm. of mercury, the second column expresses the pressure as a percentage of the reading before the anæsthetic.

TABLE I.—CHLOROFORM.

Sex.	Age.	Systolic Pressure.	Seconds.																	
			½	½	1½	2½	3½	4½	5½	6½	7½	8½	9½	10½	11½	12½	13½	14½	15½	16½
M.	35	130	130	100	130	100	130	100	135	103	135	103	135	103	130	100	130	100	115	88
F.	30	145	150	103	150	103	150	103	145	100	135	93	140	96	145	100	140	96	130	89
M.	63	170	165	97	160	94	155	91	140	82	145	85	160	94	155	91	155	91	155	91
F.	50	125	120	96	120	96	120	96	120	96	120	96	120	96	120	96	120	96	120	96
F.	58	145	140	96	145	100	135	93	130	89	130	89	135	93	130	89	130	89	130	89
M.	49	120	110	91	120	100	115	95	115	95	115	95	110	91	110	91	105	87	110	91
F.	26	110	90	81	100	90	90	81	75	68	75	68	75	68	80	72	80	72	75	68
M.	16	120	120	100	120	100	115	95	115	95	110	91	110	91	110	91	105	87	105	87
M.	13	115	115	100	110	95	110	95	110	95	110	95	105	91	105	91	95	82	95	82
M.	24	130	130	100	115	88	115	88	115	88	110	84	115	88	110	84	110	84	110	84
Average .				96		96		93		91		87		91		90		88		86

The depressor effects on the circulation are well illustrated by chloroform. If given in too concentrated form it may cause sudden, severe, and even fatal inhibition of the heart by direct stimulation of the inhibitory centre. This accident is particularly liable to occur at the beginning of the administration, and probably could be avoided by the previous administration of atropine, which paralyses the connection between the vagus fibres and the cardiac ganglia. Our personal experience of this condition is fortunately limited to experiments on animals, and since we have adopted the plan of anæsthetising animals in a box, and thus eliminated the element of struggling against restraint and sudden deep inspirations, we have not once encountered it. The dangerous effects which have succeeded the initial steps of operation are to be accounted for by reflex stimulation of the cardio-inhibitory centre.

In Table I. the readings show an almost complete absence of any rise of pressure. This is accounted for by the fact that there was practically no excitement or struggling. The figures show strikingly the fall of pressure which chloroform *per se* brings about by depression of the cardiac muscle, by dilatation of vessels, or by both.

Nitrous Oxide.—This anæsthetic was administered in two different ways: (1) With valves. In this method the patient inhales gas and expires through valves, so that in a short time his residual air is washed out by gas and he is totally deprived of

air for the time being. In all the gas cases the face-piece was removed in from 60 to 70 seconds. In the tables the figures from 80 seconds onwards may be taken as applying to the period after the anæsthetic had been removed.

TABLE II.—GAS WITH VALVES.

Sex.	Age.	Systolic Pressure.	Seconds.													
			15	15	30	30	45	45	60	60	90	90	120	120	150	150
M.	13	120	120	100	125	104	130	108	130	108	125	104	120	100	...	...
M.	19	125	125	100	140	112	145	116	160	128	150	120	155	124	...	...
M.	21	125	125	100	140	112	150	120	160	128	160	128	...	...	..	..
F.	15	110	110	110	130	118	155	140	155	140	140	127	120	109	...	...
M.	34	125	130	104	130	104	135	108	140	112	140	112	...	...	...	...
M.	18	125	125	100	125	100	130	104	140	112	...	...	160	128	...	...
M.	21	170	180	105	175	102	190	111	195	114	190	111	200	117	...	...
F.	15	135	140	103	155	114	155	114	165	122	150	111	140	103	135	100
F.	10	110	120	109	140	127	145	131	145	131	130	118	120	109	110	100
M.	18	135	140	103	145	107	150	111	160	118	175	129	185	137	170	125
F.	24	130	145	111	...	...	135	103	140	107	...	...	150	115	...	...
F.	16	130	135	103	140	107	150	115	160	123	170	130	150	115	135	103
F.	24	135	145	107	155	114	155	114	170	125	200	148	180	133	175	129
M.	14	130	140	107	165	126	175	134	155	119	155	119	165	126	155	119
M.	52	165	165	100	180	109	190	115	195	118	200	121	195	118	195	118
M.	20	120	130	108	135	112	145	120	145	120	150	125	130	108	120	100
M.	16	130	140	107	145	111	145	111	155	119	...	..	.	...	...	...
F.	15	110	120	109	125	113	130	118	135	122	140	127	145	131	110	100
M.	18	125	135	108	140	112	150	120	160	128	170	136	155	124	155	124
M.	21	115	125	108	135	117	140	121	150	130	140	121	...	...	...	...
Average .				105		111		116		121		123		118		110

(2) Rebreathing. In this method a two-gallon bag is filled with gas. The patient breathes in and out of this bag and thus rebreathes air which contains a certain though diminishing proportion of oxygen, and which, though it is becoming charged with an increasing amount of carbon dioxide, nevertheless maintains a fair degree of aeration of the blood during the limited period of the administration.

TABLE III.—GAS REBREATHING.

Sex	Age	Systolic Pressure	Seconds																	
			½	½	¾	¾	1	1	1¼	1¼	1½	1½	1¾	1¾	2	2	2½	2½	3	3
M.	8	130	140	107	155	119	...	..	190	130	180	138	175	134	..	..	..	..	...	...
F.	34	170	..	..	180	111	200	117	190	111	190	111	..	...	..	...	..	...	..	...
M.	16	145	150	103	155	106	160	110	170	117	180	124	170	117	160	110	150	103	145	100
M.	15	130	125	96	140	107	150	115	165	126	170	130	165	...	..	...	..	..	...	...
M.	31	150	...	..	160	106	175	116	175	116	170	113	...	..	...	...	..	...	..	..
F.	14	145	...	...	155	106	170	117	160	110	145	100	...	..	180	124	..	..	...	...
M.	30	150	..	...	170	113	180	120	190	126	200	133	...	...	...	...	...	...	...	...
F.	30	140	155	110	155	110	150	107	150	107	170	121	150	107	150	107	...	...	...	...
F.	15	145	145	100	140	96	145	100	145	100	135	93	155	106	...	...	...	...	...	...
F.	15	120	150	108	130	108	135	112	150	125	140	116	125	104	120	100	..	...	...	...
M.	16	135	145	107	150	111	155	114	160	118	170	125	175	129	170	125	150	111	135	100
M.	20	150	155	103	160	106	165	170	170	113	180	120	180	120	160	106	...	..	...	...
F.	25	130	130	100	135	103	140	107	140	107	135	103	135	103	...	...	...	...	...	...
F.	18	135	150	111	155	114	155	114	160	118	160	118	145	107	...	...	...		...	...
M.	16	140	155	110	150	107	145	103	150	107	155	110	...	..	...	...	...	...	...	..
F.	10	125	125	100	160	128	160	128	160	128	155	124	155	124	..	..	..	...	...	...
F.	27	130	130	100	130	100	130	100	140	107	...	...	...	...	...	...	...	...	...	...
M.	6	115	115	100	120	104	120	104	130	113	130	113	...	...	...	...	..	...	...	...
M.	26	140	140	107	145	111	145	111	150	115	150	115	...	...	...	...	...	...	...	...
M.	18	135	135	103	140	107	145	111	145	111	145	111	...	..	...	...	...	...	...	...
Average				104		108		111		120		116		115		112				

The tables show that with both methods there is a considerable rise in the blood-pressure, but that the rise is greater when valves are employed. The rise of pressure is associated with constriction of the arterioles and is of asphyxial origin. The cases anæsthetised with valves in action all became cyanosed.

Nitrous Oxide (Rebreathing) preceded by Oxygen.—This series was observed with the view (1) of ascertaining whether the symptoms of asphyxia were to be accounted for by deprivation of oxygen, or by accumulation of CO_2, and (2) of finding an easy method whereby a satisfactory anæsthesia could be obtained quite free from the asphyxial element. After several observations, we arrived at the following procedure:—A one-gallon bag was filled with oxygen. This was inhaled by the patient, who exhaled through valves, so that his lungs were washed out with oxygen. As soon as the bag became empty a bag containing two gallons of

nitrous oxide gas was substituted, and the patient then inhaled gas, and at the same time rebreathed his expired air, which, to begin with, contained an unusually high percentage of oxygen.

TABLE IV.—OXYGEN AND GAS REBREATHING.

Sex.	Age.	Systolic Pressure.	OXYGEN. Seconds.		GAS. Seconds.													
			½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½
F.	14	115	120	104	...	...	130	113	120	104	115	100	115	100	115	100	...	
F.	23	135	145	107	135	100	140	103	135	100	135	100	135	100	135	100	...	...
F.	13	110	110	100	120	109	120	109	115	104	115	104	115	104	115	104	..	..
F.	24	120	120	100	125	104	125	104	120	100	125	104	125	104	120	100	...	..
M.	17	115	115	100	120	104	110	95	120	104	120	104	115	100	...	..	...	
F.	15	120	115	95	120	100	125	104	135	112	135	112	140	116	130	108	..	...
M.	15	120	125	104	130	108	130	108	130	108	135	112	135	112	...	..	...	...
F.	12	120	120	100	120	100	120	100	120	100	120	100	...	...	...	...	..	..
F.	26	135	135	100	140	103	140	103	140	103	140	103	140	103	135	100	...	
F.	19	120	120	100	120	100	120	100	125	100	120	100	120	100	120	...	..	..
F.	18	130	130	100	130	100	130	100	130	100	130	100	130	100	130	100	...	...
M.	22	130	130	100	130	100	130	100	130	100	130	100	130	100	130	100	...	
F.	18	125	125	100	125	100	125	100	125	100	125	100	125	100	..	...	...	
F.	16	135	135	100	135	100	135	100	135	100	140	103	135	100	135	100	...	..
F.	16	135	135	100	135	100	135	100	135	100	135	100	135	100	...	..	..	...
F.	17	130	135	103	140	107	140	107	140	107	140	107	150	115	130	100	...	
F.	27	130	130	100	130	100	130	100	130	100	130	100	130	100	130	100	..	...
M.	7	110	110	100	110	100	115	104	115	104	115	104	110	100	...			...
F.	60	185	185	100	185	100	185	100	185	100	185	100	185	100	.	.	..	...
M.	18	125	125	100	125	100	125	100	125	100	130	104	130	104	130	104	...	
Average .				100		101		102		102		103		101				

The effect on the systolic pressure was remarkable. The maximum rise in any case was only 15 per cent., and this increase was only once noted. The average maximum increase was only 3 per cent.

Gas and Ether.—Nitrous oxide alone was inhaled for 25 seconds, the ether dome was gradually rotated for from 25 to 50 seconds. A breath of air was given at 60 to 70 seconds, the face-piece was finally removed at from 90 to 120 seconds.

TABLE V.—GAS AND ETHER.

Sex.	Age.	Systolic Pressure.	Seconds.																									
			½	...	½	...	1½	...	2½	...	3½	...	4½	...	5½	...	6½	...	7½	...	8½	...	9½	...	200 2½	...	220 +
F.	15	110	120	109	130	118	135	122	145	131	140	127	140	127	140	127	145	131	150	136	130	118	115	104	.
F.	21	135	145	107	150	111	180	133	180	133	180	133	190	140	185	137	175	129	175	129	170	125	150	111	.
F.	28	120	120	100	125	104	130	108	150	125	150	125	150	125	155	129	160	133	160	133	155	129	150	125	120
F.	19	150	150	100	155	103	155	103	155	103	155	103	150	100	160	106	165	110	165	110	165	110	155	103	150
F.	37	140	150	107	160	114	160	114	160	114	160	114	170	121	160	114	160	114	160	114	...	...	...	...	.
M.	23	150	155	103	160	106	170	113	180	120	170	113	180	120	170	113	170	113	180	120	.	...	..	...	..
F.	24	135	140	103	140	103	150	111	155	114	155	114	160	118	170	125	170	125	165	122	150	111	135	100	..
M.	26	130	135	103	140	107	140	107	140	107	140	107	150	115	150	115	140	107	...	...	...	...	...	...	...
M.	21	130	140	107	140	107	140	107	155	119	160	123	160	123	175	134	175	134	170	130	170	130	...	...	130
F.	23	145	150	103	160	110	160	110	160	110	155	106	160	110	160	110	150	103	150	103	160	110	165	...	150
F.	17	150	175	116	190	126	190	126	200	133	190	126	180	120	190	126	170	113	160	106	170	113	165	110	...
M.	26	145	140	96	150	103	170	117	160	110	165	113	155	106	140	96	145	100	145	100	...	...	..	...	..
F.	45	140	145	103	155	110	155	110	155	110	160	114	160	114	170	121	175	125	170	121	165	117	150	107	140
F.	17	135	135	100	140	103	150	111	150	111	150	111	145	107	160	118	160	118	170	125	170	125	170	125	160
F.	26	130	130	100	140	107	140	107	140	107	140	107	155	119	160	123	160	123	165	126	165	126	135	103	130
F.	20	120	130	108	140	116	150	125	150	125	170	141	170	141	165	137	160	133	150	125	130	108	120	100	...
F.	19	135	140	103	145	107	150	111	150	111	160	118	165	122	175	129	175	129	170	125	160	118	145	107	130
M.	22	150	155	103	165	110	190	126	190	126	190	126	190	126	190	126	195	130	180	120	160	106	150	100	...
M.	24	130	130	100	125	96	130	100	135	103	130	100	140	107	140	107	130	100	130	100	110	107	...	...	...
M.	20	125	145	116	145	116	160	128	150	120	160	128	150	115	175	140	170	136	150	120	145	116	140	112	130
Average .				104		108		114		116		117		118		121		120		119		116		108	

In this series the most striking result is the constant and nearly uniform rise of pressure. Any fall that was noticed was almost negligible, and might well be considered as within the probable error of observation. The rise in pressure is not accounted for by asphyxia, as it persists and may increase some considerable time after the face-piece has been removed. It is due to stimulation of the heart, and apparently also to a certain amount of vaso-constriction.

Ethyl Chloride.—In this series the dose was varied, and the results are set out in three separate tables. The face-piece was removed in about 45 seconds, so that the figures in the columns from 60 seconds onwards apply to the period after administration.

TABLE VI.—ETHYL CHLORIDE 3 C.C.

Sex.	Age.	C.C.	Systolic Pressure.	Seconds.											
M.	14	3	115	115	100	115	100	115	100	115	100	115	100	115	100
M.	19	3	130	110	84	125	96	120	92	110	84	120	92	.	.
M.	27	3	125	135	108	130	104	125	100	125	100	115	116	.	.
M.	22	3	150	160	106	165	110	160	106	160	106	150	100	.	.
F.	18	3	130	140	107	140	107	135	103	120	92	125	96	120	92
F.	18	3	125	135	103	145	116	130	104	135	103	140	112	140	112
F.	21	3	130	125	96	115	88	110	84	115	88	120	92	125	96
F.	21	3	115	100	86	95	82	95	82	.	.	.	.	.	.
M.	10	3	120	115	95	110	91	110	91	115	95	115	95	.	.
F.	15	3	130	140	107	135	103	140	107	135	103	130	100	.	.
Average		.	.		99		99		96		96		100		100

TABLE VII.—ETHYL CHLORIDE 4 C.C.

Sex.	Age.	C.C.	Systolic Pressure.	Seconds.															
F.	22	4	125	110	96	115	92	110	96	95	82	90	72	100	80	.	.	.	.
F.	25	4	120	100	83	90	75	80	66	85	70	100	83	115	95	120	100	.	.
M.	19	4	130	110	84	120	92	110	84	110	84	120	92	.	.	.	.	.	.
M.	18	4	120	110	91	110	91	105	87	.	.	.	.	115	95	120	100	.	.
M.	31	4	135	135	100	140	103	140	103	130	96	.	.	.	.	.	.	.	.
M.	17	4	135	150	96	150	111	155	114	160	118	115	107	150	111	.	.	.	.
F.	21	4	150	150	100	140	93	140	93	145	96	140	93	140	93	.	.	.	.
F.	18	4	130	150	115	140	107	145	111	160	123	120	92	120	92	.	.	.	.
F.	19	4	115	120	104	115	100	110	95	110	95	.	.	.	.	.	.	.	.
F.	16	4	140	140	100	135	96	130	92	130	92	130	92	.	.	.	.	.	.
F.	34	4	130	135	103	130	100	125	96	120	92	125	96	140	107	.	.	.	.
F.	25	4	135	135	100	130	96	125	92	120	88	120	88	.	.	.	.	.	.
F.	21	4	125	125	100	120	96	120	96	125	100	125	100	125	100	.	.	.	.
M.	14	4	120	110	91	100	83	100	83	100	83	100	83	100	83	130	141	160	133
F.	18	4	120	135	112	135	112	120	100	115	95	115	95	140	116	140	116	.	.
F.	19	4	135	145	107	140	103	140	103	110	103	150	111	.	.	.	.	.	.
M.	23	4	125	120	96	120	96	110	88	95	76	100	80	115	92	125	100	.	.
F.	16	4	135	130	96	115	85	110	81	120	88	125	92	130	96	135	100	.	.
F.	8	4	110	100	90	100	90	95	86	100	90	90	81	90	81	.	.	.	.
M.	9	4	125	120	96	125	100	130	104	110	88	.	.	.	.	130	104	.	.
Average		.	.		98		96		93		92		90		94		105		

TABLE VIII.—ETHYL CHLORIDE 5 C.C.

Sex.	Age.	Systolic Pressure.	Seconds.															
			½	½	60	60	90	120	90	90	90	90	120	120	120	120	120	120
F.	20	125	135	108	135	108	135	108	135	108	130	104			125	100		
F.	17	135	140	103	135	100	135	100	130	96	130	96	120	88	120	88		
F.	30	120	140	116	125	104	120	100	110	91	105	87	145	120	140	116	150	125
F.	19	130	135	103	135	103	130	100	125	96	160	123	170	130	150	115		
M.	20	125	120	96	115	92	110	88	140	112	140	112	145	116	130	104	125	100
M.	14	135	130	96	135	100	130	96	130	96	155	114	160	118	160	118	150	111
F.	19	145	145	100	145	100	145	100	160	110	165	113	170	117	160	110	150	103
M.	16	120	110	91	90	75	85	70	85	70	90	75	90	75	90	75	95	79
M.	31	125	110	88	100	80	100	80	105	84	140	112	140	112	140	112		
F.	16	115	110	95	95	78	85	73	110	95	135	117	135	117	135	117	135	117
Average				99		94		91		95		105		110		105		105

We may point out to begin with that the averages in the case of ethyl chloride do not fairly indicate the course of the changes. The effects are not constant, and similar effects do not occur at the same time in different cases. The effect of averaging such results is to give a mean appearance of uniformity which they do not possess.

There is no doubt that the general effect is a lowering of blood-pressure. The fall increases with dose, and may reach a dangerous degree.

In some cases there is a rise of pressure throughout the administration, and in others, again, there is a very marked rise of pressure succeeding a fall. In some of the latter the pulse has been beating rapidly and feebly, when it suddenly becomes much more powerful and slow. This corresponds with the rise in systolic pressure, and may be due to a sudden spasm of the arterioles. The effects of larger doses than we administered would be of interest, but we are content to leave such observations to others, with the remark that should a fatality occur it will be unnecessary to invoke a diagnosis of "lymphatism" to account for it.

Gas and Ethyl Chloride.—For several years this has been the anæsthetic most commonly employed at the Edinburgh Dental Hospital. Our first observations were made with this method, and number over 130. We tabulate the figures in the last 20 cases and give the average figures of the last 100.

After 5 inhalations of gas only, the ethyl chloride is added to

it, and the resulting mixture, together with exhaled air, is inhaled for 25 seconds. The amount of ethyl chloride is never more than 3 c.c.

TABLE IX.—GAS AND ETHYL CHLORIDE.

Sex.	Age.	Systolic Pressure.	Seconds. (Gas only.)		Seconds. After addition of Ethyl Chloride.											
			½	½	½	1½	2½	2½	1½	1½	2½	2½	2½	3½	100 +	100 +
M.	18	145	150	**103**	160	**110**	...	...	170	**117**	160	**110**	160	**110**	.	.
M.	19	135	180	**133**	165	**122**	.	.	180	**133**	150	**111**	.	.	.	.
F.	26	150	165	**110**	165	**110**	155	**103**	145	**96**	150	**100**	150	**100**	...	.
M.	24	125	130	**104**	135	**108**	140	**112**	140	**112**	135	**108**	...	.	...	.
F.	41	140	140	**100**	...	...	140	**100**	140	**100**	...	.	...	.	.	.
M.	21	130	135	**103**	140	**107**	150	**115**	155	**119**	.	.	...	.	.	.
F.	25	155	160	**103**	170	**109**	180	**116**	175	**112**	170	**109**	165	**106**	160	**103**
M.	28	155	160	**103**	165	**106**	170	**109**	170	**109**	170	**109**	...	.	170	**109**
M.	26	150	155	**103**	170	**113**	170	**113**	.	.	180	**120**	...	.	180	**120**
F.	36	130	135	**103**	155	**119**	165	**126**	165	**126**	170	**130**	.	.	175	**134**
M.	31	170	170	**100**	170	**100**	180	**105**	180	**105**	190	**111**	.	.	190	**111**
F.	16	140	160	**114**	160	**114**	170	**121**	170	**121**	170	**121**	...	...	170	**121**
F.	19	140	150	**107**	160	**114**	160	**114**	165	**117**	165	**117**	165	**117**	170	**121**
F.	17	130	135	**103**	150	**115**	150	**115**	150	**115**	160	**123**	160	**123**	.	.
M.	19	140	150	**107**	160	**114**	170	**121**	180	**128**	180	**128**	180	**128**	185	**132**
M.	24	150	165	**110**	.	.	180	**120**	185	**123**	.	.	190	**126**	190	**126**
M.	19	150	160	**106**	175	**116**	.	.	185	**123**	190	**126**	...	...	.	.
M.	18	150	180	**128**	180	**128**	185	**123**	190	**126**	185	**123**	.	...	190	**126**
F.	36	135	150	**111**	160	**118**	160	**118**	170	**125**	175	**129**	.	...	.	.
M.	25	140	140	**100**	145	**103**	155	**110**	160	**114**	170	**121**	175	**125**	180	**128**
Average of 100 Cases.						**108**		**111**		**112**		**114**		**119**		**123**

With a 3 c.c. dose of ethyl chloride the effect of the addition of gas is remarkable. The depressor effect is entirely eliminated, and there is uniformity of effect in degree and time. The initial administration of gas appears to depress the activity of the vagus inhibitory centre, and makes the subsequent administration of ethyl chloride a much safer proceeding. On the other hand, there is a constant rise in the blood-pressure, and the possibility that this might be an asphyxial effect led us to employ the next method.

Oxygen, Gas, and Ethyl Chloride.—The patient first received a gallon of oxygen, the expirations passing out through a valve. This was followed by a two-gallon bag of gas, and at the end of five respirations 3 c.c. of ethyl chloride were added, and the mixture was rebreathed for 25 seconds.

TABLE X.—OXYGEN, GAS, AND ETHYL CHLORIDE.

Sex.	Age.	Systolic Pressure.	Respirations. Oxygen.		Gas.		Seconds after Ethyl Chloride.											
			½	¾	¾	½	¼	½	¾	½	¾	½	¾	½	¾	½	100 +	100 +
M.	17	110	110	100	110	100	110	100	110	100	110	100	110	100	115	104	125	113
F.	22	125	125	100	130	105	130	105	140	112	145	116	145	116	145	116	140	112
M.	17	130	130	100	140	107	140	107	...	...	130	100	140	107	...	...	...	...
M.	25	145	145	100	145	100	150	103	150	103	150	103	150	103	150	103	...	...
F.	30	155	155	100	155	100	150	96	150	96	150	96	...	...	...	...	...	
F.	14	120	120	100	120	100	120	100	120	100	120	100	120	100	120	100	...	...
M.	19	135	140	103	140	103	140	103	145	107	145	107	135	100	...	...	...	...
M.	20	110	110	100	110	100	110	100	110	100	105	95	100	90	100	90	...	...
F.	22	110	115	104	120	109	120	109	...	...	110	100	110	100	...	...	...	...
M.	20	130	130	100	130	100	130	100	135	103	140	107	140	107	...	...	...	...
F.	14	135	130	96	135	100	135	100	130	96	130	96	135	100	...	...	...	...
F.	18	130	130	100	130	100	130	100	130	100	130	100	130	100	130	100	...	
F.	25	120	125	104	125	104	140	116	150	124	155	128	140	116	125	104	...	...
F.	22	130	135	103	130	100	130	100	130	100	130	100	130	100	130	100	...	...
F.	27	135	145	107	145	107	150	111	150	111	155	114	150	111	160	118	170	125
M.	21	150	150	100	150	100	155	103	150	100	150	100	150	100	150	100	150	...
M.	20	135	135	100	135	100	135	100	135	100	130	96	140	103	155	114	150	111
F.	9	110	110	100	110	100	115	104	115	104	115	104	115	104	115	104	115	104
M.	5	110	110	100	110	100	110	100	110	100	115	104	115	104	115	104	115	104
M.	21	150	150	100	155	103	160	106	160	106	160	106	...	...	160	106	...	...
Average								103		103		103		103		105		111

The steadying effect on the blood-pressure was remarkable. The slight fall of pressure which was once or twice noticed was negligible, while the rise, which was the usual effect, was also slight. It appears to us that this method which eliminates the slight asphyxial element common to all closed methods, and maintains the blood-pressure at a practically constant level, should commend itself to anæsthetists.

Conclusions.—The chief points which we wish to emphasise are the following:—1. That there is no practical difference between

the available anæsthesia brought about by nitrous oxide when rebreathing is allowed and that available when nitrous oxide is given with valves, but the effects of asphyxia are much more marked in the latter method.

2. The asphyxial element present in the rebreathing method can be avoided by the previous inhalation of a gallon of oxygen, but the period of available anæsthesia is often shortened a few seconds.

3. Ethyl chloride causes marked disturbance of the circulation, and in large doses may bring about a dangerous fall of systolic blood-pressure by inhibition of the heart.

4. This fall is prevented by the previous inhalation of gas, the effect then being a constant rise, probably, in part at least, due to asphyxia.

5. The slight asphyxial element in gas and ethyl chloride anæsthesia can be eliminated by the previous administration of a gallon of oxygen without any shortening of the period of available anæsthesia.

SOME NOTES ON HEALTH IN THE ANTARCTIC.

By A. FORBES MACKAY, C.V.O., M.B., Ch.B.,
Late Civil Surgeon, East London, South Africa; and Surgeon to
Sir E. Shackleton's Antarctic Expedition.

THE health of our party of fifteen during our sojourn of about fourteen months within the Antarctic circle was as nearly perfect as could be. We had not a trace of scurvy, no coughs or colds, no anæmia, zymotic diseases, no rheumatism. Some members of the party suffered slightly from dyspepsia during the winter, but this might be ascribed to large appetites and little exercise. We felt none of that depression of spirits of which gruesome pictures are painted by some polar explorers. This was due mainly to the hearty feeling of good-fellowship kept up by the old hands, and soon copied by the new. Besides this, our hut was so small that there was nowhere for a man to go and sulk, and outside it was too cold.

Also, scientific work of all sorts was kept up right through the dark months. Every common daily act takes far longer to perform in the climate of the Antarctic than in the temperate regions, and in this way time is filled up. It is a mistake to suppose that one is necessarily idle during the dark months; rather the contrary is the case. Besides, a good commander *makes* work without irritating the men.

FROSTBITES.

Frostbites may occur at any temperature below about +20° F., especially if there is a breeze, if the clothes are wet, or if the subject is very hungry or exhausted. When on full rations, a far lower temperature can be borne than when these are reduced. But, if taken in time, there should be no loss of tissue. I think that frostbites may be classified in much the same way as burns: (1) An *erythema*, with subsequent slight desquamation, which follows as a healing process. The first sign of the frostbite is a parchmenty-white appearance of the skin. (2) *Vesication.*—This occurs commonly on the fingers, nose, ears, and cheek, if the first signs of frostbite are neglected. The appearance afterwards is indistinguishable from that of a burn. (3) *Destruction of Cuticle and Part of the True Skin.*—I remember one good example of this. It was caused by a badly-put-on Burbery

helmet, and occurred at a temperature of about – 50° F. The site was below the left ear. (4) *Destruction of the Whole Skin.*—I remember two cases of this degree of severity which were brought into Queenstown military hospital, Cape Colony. The parts affected were the back of one hand, and the outer aspect of one thigh. They occurred during a blizzard which we had there—to a party of Lovat's Scouts who were bivouacking in the open. Frostbites are not unknown among the native herdsmen on the high veldt of South Africa. (5) On the Antarctic expedition we had only one case of frostbite involving loss of a part. This was in the case of one of our party who ascended Erebus. He had been complaining for some hours of numbness, but not pain, in his left foot, and was advised to change the ski-boots he was wearing for finneskoe. Ski-boots are made of leather, and finneskoe of reindeer hide with the hair on.

When we examined the foot at the end of the day, we found the distal half of it white and anæsthetic and several patches of almost black extravasated blood showing on the toes and inner aspect of the foot. We were considerably alarmed at this, and began immediately to chafe the foot, after putting on a sock. From time to time we held the foot next to our skin under the axilla.

During recovery the patient felt excruciating pain. We kept the foot in cotton-wool for about a week after our return to the hut. And then, as a sinus formed, and bare bone could be felt, we amputated the two terminal phalanges. An abscess formed in the stump and the healing was very slow.

This was a pretty typical case of frostbite of the foot. I mean that the process generally goes on slowly and almost painlessly, especially when the subject is walking, until the foot feels numb. At this point the subject should inform the other members of the party. The party then halts. If necessary the tent is pitched; and generally all that is needed is to change from ski-boots, supposing the subject to be wearing them, into finneskoe. If he is already in finneskoe, he must change into dry socks. If he has no dry socks he should borrow them. The process of recovery from a semi-frostbitten foot is excruciatingly painful. But the question of why some frostbites are painful, and others not, is a very difficult one to answer. There is a great deal in this; that regions of acute tactile sensibility are more painful than others. Thus, a frostbite of the cheek, where tactile sensibility is low, may take place without the subject knowing it, while frostbites of the fingers are

the most painful of all. Experiments in this direction may be carried out by means of an ethyl-chloride spray.

It is very hard to estimate the degree of pain that a man is suffering, but I can say this, that, although I have served several years in both Army and Navy, I have never heard such hard swearing as when a man's fingers were slowly going, while, with bare hands he was attempting to, say, untie a hard knot, with the temperature at −30° F., and a breeze blowing.

Snow-Blindness.

This somewhat mysterious affliction did not give us much trouble on our expedition, as we were generally careful to wear the special goggles designed by Dr. Marshall. But the best of goggles have many disadvantages. They limit the field of vision so that one cannot see one's feet, or the ground one is treading on without stooping uncomfortably. Then nothing can prevent them at times getting fogged by the breath, which generally freezes on them. Many of us went without them for days at a time and suffered no inconvenience. It is said that foggy weather on snow plains is the worst for causing snow-blindness, but we did not find it so.

It has also been alleged that where there is a considerable dark rock surface to rest one's eyes on, snow-blindness will not occur, but my worst attack of snow-blindness was contracted in such a place. I was leading a reconnoitring party up a steep snow-slope, which led on to the inland plateau. The sun was very high and bright, as it was near midsummer (December) and there was a strong glare from the snow. However, there was a high, dark rocky cliff close to us on our left. As I was leading, I did not wear my snow goggles, for I wanted to see all I could. When we returned to camp, late in the evening, I felt no uneasiness, and next day I wore my goggles. That night, however, my eyes began to water profusely, and soon I was feeling intense pain and photophobia, which kept me awake all night. I treated myself with lamellæ of zinc sulphate and cocaine. For twenty-four hours afterwards I was half blind, and my eyes were painful.

The treatment is as I have indicated.

We all suffered at times from very badly chapped lips. This was so bad that the lips became glued together, and gave great pain when speaking or eating. Sometimes our biscuits almost dripped with blood as we bit a piece off. Lanoline did some good,

but its effects soon wore off. A good plan is to tie a bit of bandage over the lower lip, into the angles of the mouth and knotted behind the neck. This keeps the lips from sticking, and retains the ointment. If the ulcers become indolent, they can be stimulated with pure zinc sulphate.

As I have noticed that many erroneous ideas are abroad regarding the inconveniences attending micturition and defecation in the extreme cold of the Antarctic circle, I may, perhaps, record our experience. No difficulty was ever experienced in passing water even in the lowest temperatures. One turns one's back to the wind, and the act is over in a minute.

The act of defecation, however, is a different matter. If the weather is at all cold, it is very uncomfortable, and when the thermometer falls to −40° F. or so, and there is a breeze, it is most painful. The pain is felt not so much in one's pelvic parts, as in the fingers, which must be bared in order to unbutton and button up the trousers. Our trousers were made sailor-pattern, with more buttons than I have ever seen on any trousers. This was a mistake, and if I went again, I would have my trousers made somewhat like pyjamas, with a belt sewn on.

Foods for sledging in the Antarctic should be as fatty as possible. The digestion adapts itself to the fat, and soon the stomach is craving for it. Pemmican, which is made out of desiccated beef, rubbed up with 60 per cent. of fat, is an ideal food for this work and climate. When we began to live on seal-meat, we at first boiled up the flesh only, but we soon began to crave for fat. Seal-blubber is so nauseous in flavour that, while we were living in the hut on a full diet, a small fragment of it, eaten by mistake with our seal-meat, was enough to make one almost vomit. Yet towards the end of our sledge journey we could eat large lumps of it half raw, with a relish.

CASES OF LARYNGEAL TUMOUR, WITH REMARKS ON THE TECHNIQUE OF THEIR REMOVAL.

By W. G. PORTER, M.B., B.Sc., F.R.C.S.,
Surgeon to the Eye, Ear, and Throat Infirmary, Edinburgh.

DURING the past two or three years a number of cases of laryngeal growths have occurred in my practice. Some of these are important on account of their rarity, others are of interest owing to the difficulties they presented in treatment.

The first to which I shall draw attention is, so far as I know, unique. I have searched the literature without finding an analogous observation. On 4th November 1909 the patient, an army officer, æt. 33, consulted Dr. M'Bride, who kindly referred him to me for treatment. He was complaining of huskiness, which had been continuous for six or seven months. He thought it was worse when he had a cold, but more especially when he was tired.

In May 1901 he was bucked off a horse; he did not lose consciousness, but was for a time unable to move or speak. For six months he seems to have had great difficulty in moving his head; he also had trouble in swallowing solids, which was still present at the time of examination. He does not remember his voice being husky, but after a lot of hard work in 1905 it began to be affected.

On examining the larynx a bluish neoplasm was seen on the anterior part of the left cord. It hid rather less than half of the cord, and seemed to be growing out of the ventricle, for the false cord appeared to be stretched over the tumour. It formed a mechanical hindrance to complete adduction of the cords; abduction was unimpaired. From the colour of the tumour it was thought to be an angioma.

A successful anæsthesia was not induced at the first sitting, the throat being unusually irritable; at the second the larynx was rendered completely insensitive. Moritz Schmidt's forceps were introduced, and the neoplasm was seized firmly; a fairly vigorous pull failed to detach it, and it was let go, a very small portion being removed. On examining the larynx immediately afterwards the tumour was found to have disappeared; it was then observed that the edge of the cord was bowed where the tumour had lain. The next day the growth was seen again occupying its former position. It was supposed, therefore, that

on the previous day it must have disappeared temporarily into the ventricle of the larynx, and it was obvious that the neoplasm was attached somewhere within that recess.

As the growth was too firmly attached to warrant the risk of tearing it away, it was removed bit by bit by the Krause Heryng cutting forceps, the last portion, however, being pulled off. This required two sittings, as there was a certain amount of hæmorrhage. After the completion of the operation it was again observed that the edge of the cord was bowed, though when seen by Dr. M'Bride a few days later it was straight. This disposes of one possible explanation, namely, that the bowing was due to atrophy from pressure, but if that had been the cause, it could hardly have disappeared as it did in a few days. My opinion is, that it may have been due to stretching of the cord and relaxation of the thyro-arytenoid muscle, induced partly by the weight of the tumour and partly by the extra exertion required for adducting the cords; therefore, when the tumour was removed, a few days' rest was sufficient to remedy this. Whatever the cause may have been, the condition is not common in my experience—indeed I have only seen it on one previous occasion. That was a case upon which Professor H. Krause of Berlin had operated. He drew my attention to the bowing of the cord, but I do not remember that he offered any explanation.

Sections were cut from the various portions of the tumour, and all showed similar structure. The accompanying micro-photographs, for which I am indebted to Mr. Richard Muir, illustrate the histology very well. The first, which was taken under the low power (x 60 diam.), shows on the surface the mucous membrane; below this there is a very loose connective tissue with large spaces full of blood, and altered fibrin; one in particular is very large, and occupies the whole of the lower half of the photograph. In the second, which is magnified 160 diameters, the connective tissue itself is seen to be œdematous and highly vascular. There is no true organisation of the blood taking place. In the right-hand bottom corner a small part of one of the large spaces can be seen. Thus the structure is not that of a new growth, but simply of a very vascular loose connective tissue underlying the mucous membrane and containing many hæmorrhages. This makes an explanation of the etiology extremely difficult, for it does not appear probable that a fall eight years previously could have had any connection with it. That the condition was present at least six months is obvious from the history.

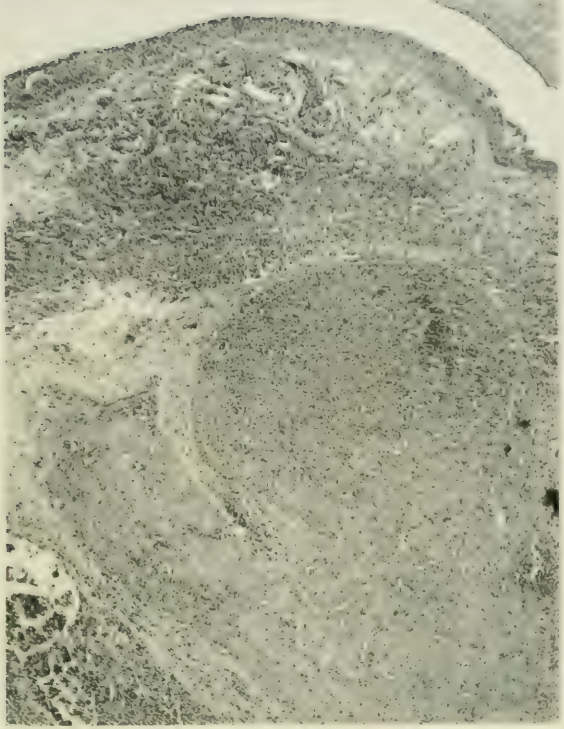
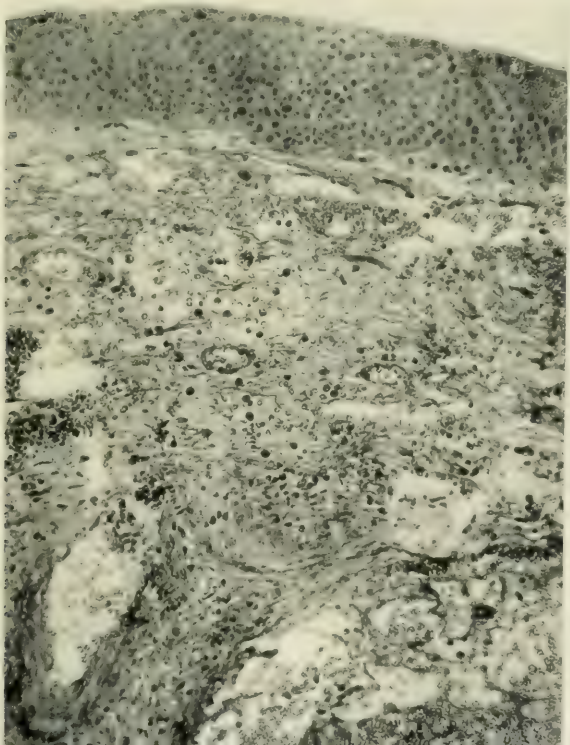


Fig. 1 (× 60 diam.)



I next come to a series of cases of "singers' nodes," which, as their name implies, are commonly met with among professional singers. To such persons the importance of successful treatment can hardly be exaggerated, as failure means that the profession, and possibly with it the only means of livelihood, must be abandoned. If no operation be attempted, prolonged voice rest is the only alternative line of treatment, and that does not ensure a certain cure; if, on the other hand, active measures are adopted, and the growths are not removed with absolute accuracy, the voice may remain somewhat impaired, and therefore professionally useless.

I have records of three examples of this condition. The first case was that of a lady, æt. 30, a professional singer, who consulted me on 31st July 1908. She complained of hoarseness, which had been troubling her for four months. She had persevered with her singing up to a fortnight before the consultation, but had then been compelled to give it up. Her speaking voice was also a little husky.

On examination of the larynx, a small projection was seen at the junction of the anterior and middle third of each vocal cord, the node on the right side was the larger. Neither of the cords was injected. On 2nd August the growth on the right cord was removed; a slight projection, however, still remained on this side after the operation. On 4th August an unsuccessful attempt was made to remove the node on the left cord. On 7th August the tumour on the left cord and the remains of the growth on the right were successfully removed. On 21st August, on examining the larynx, the cords did not appear red, and there was still a very slight projection on the left cord. The patient was asked to sing a note or two, and the voice was clear. She used her voice as little as possible during the treatment, and she did not begin to sing till November. Her voice is now as good as ever it was, and she is actively engaged in her profession.

The second case was that of a young woman, æt. 34, also a professional singer, who consulted me on 10th April 1908. She complained of huskiness, which had been present for five months; it had come on gradually without apparent cause, and now entirely prevented her from singing. On examination of the larynx a small projection was seen on the left cord at about the junction of the anterior and middle third, the cord itself being moderately injected. I operated on her in the Eye, Ear, and Throat Infirmary, Edinburgh, removing the node with Moritz Schmidt's forceps. The case, with

a micro-photograph of the growth, is recorded in the hospital reports, which will be published shortly. The functional result was perfect.

The third case occurred in my hospital practice, and is of less interest, as the patient was a young woman who did not use her voice professionally. The node, which was situated on the left cord, was removed, but I can make no statement as to the result, as she did not return for further treatment.

I shall now refer to a case of multiple papillomata of the larynx occurring in an adult. Though not very uncommon, these cases present considerable difficulty in treatment. The patient, a gentleman, æt. 36, was seen in private on 2nd December 1909. He complained of hoarseness, which had lasted five years, and which came on gradually. Examination showed multiple papillomata on both sides of the larynx, and covering the anterior commissure. A growth was also seen on the left side attached to the false cord. The voice was reduced to a hoarse whisper. Six sittings were required to clear out the papillomata, the Krause-Heryng forceps and those of Moritz Schmidt being employed for this purpose. After these operations the voice, though much better, was a little hoarse, as the edges of the cords were rather ragged. The electric cautery was therefore applied along their margins, partly to remedy this defect and partly in the hope of preventing a recurrence of the growths.

Microscopical examination of one of the tumours showed a typical papilloma, with, however, numerous layers of epithelial cells on the surface.

I shall conclude with some remarks on the technique of these operations. They were all done under cocaine anæsthesia by the indirect method. This is undoubtedly much more comfortable for the patient than the direct, and it is safe and reliable if the anæsthesia be complete. I make this proviso advisedly, because I believe that the success of the operation depends on this factor perhaps more than on any other.

I shall describe with some detail the method I employ for inducing anæsthesia, because, so far as I know, it is not well known, and I have not seen it described in the various recent text-books to which I have had access. It was when working in Professor H. Krause's clinique in Berlin some four years ago that I first saw it adopted, and I think the credit of introducing it is due to him. I have worked out the details of the method for myself. It is carried out in the following way:—

The soft palate is rendered insensitive by the application of a

pledget of wool dipped in a 10 per cent. solution of cocaine hydrochloride. The remainder of the anæsthesia is produced by the instillation of a 20 per cent. solution of that drug: 20 minims is sufficient for anæsthetising the whole larynx. It is introduced by a laryngeal syringe, whose nozzle has a very fine orifice, so that the liquid may be expelled in small drops. This is essential in order to restrict the total quantity of cocaine employed.

The laryngeal mirror is introduced after the application to the soft palate, and the epiglottis is treated by allowing three or four drops to fall along its upper border. After a pause of about a minute the arytenoid cartilages are rendered insensitive in like manner. After a second short pause the interior of the larynx is anæsthetised, drops being allowed to fall on the false cords, and, during phonation, on the true cords, while, if the epiglottis overhangs the larynx, it is lifted up by the point of the syringe. After a further brief interval a few more drops are again allowed to fall on the part which is to be the site of operation. The patient should be encouraged to give a cough after each instillation in order that some of the cocaine may reach the lower part of the pharynx and the posterior aspect of the epiglottis. The surgeon may commence to operate a minute or two after the last instillation. It is better to be deliberate in carrying out the anæsthesia, because a minimum of cocaine is used, though every part of the larynx receives its share. The advantage of this when dealing with such concentrated solutions is obvious.

This method of anæsthetising renders it possible to remove growths by the indirect method from patients in whom the mere inspection of the interior of the larynx is at first difficult. I have found that it is essential to use a solution as strong as 20 per cent. With weaker solutions the anæsthesia is insufficient for the more delicate operations. I am convinced that it is the lack of efficient anæsthesia which is the cause of many of the failures in these operations. I have only failed once in the last four years in an intra-laryngeal operation by the indirect method. The patient was a boy, æt. 14, with a papilloma on each true cord: the larynx was very difficult to see, and the introduction of the syringe into the mouth at once produced violent retching. It was found impossible to produce local anæsthesia, and, finally, the growths were removed by the direct method under chloroform.

I hope what I have written will persuade any who treat such cases and who have not tried this method of inducing local anæsthesia to do so should occasion arise. I am convinced that they will be thoroughly satisfied with the result.

CLINICAL RECORDS.

CASE OF MULTIPLE ANEURYSMS.

By FRANCIS D. BOYD, M.D., F.R.C.P.,
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The patient, a powerful man, 37 years of age, by occupation a forester, was admitted to the Deaconess Hospital, Edinburgh, in December 1909. In April 1909 he first suffered from pains in the right arm and in the shoulder. The pain was especially severe under the right clavicle, and passed down the arm as far as the elbow. Occasionally he experienced a choking sensation, and latterly was conscious of difficulty in breathing, and developed a cough which markedly aggravated the pain. As a forester his work has been heavy. When twenty-one years of age he contracted syphilis, otherwise his health has been good: up to the present illness he never lost a day's work through illness. His social surroundings have been good. He does not smoke, but drinks a fair amount on Saturday nights.

On Examination.—The patient is a big, powerful man, 6 feet 2 inches in height. On inspecting the chest, pulsation is visible just below the outer half of the right clavicle. No pulsation visible over the upper part of the sternum. On palpation below the right clavicle, a pulsating swelling can be felt, the pulsation being expansile in character. Pulsation can also be felt above the clavicle and on deep palpation in the axilla. No pulsation palpable over the upper part of the sternum. On percussion the area of cardiac dulness is somewhat increased. There is no increase of dulness at the upper part of the sternum, and the impaired percussion over the pulsating area can be definitely differentiated from the cardiac dulness. This is confirmed on X-ray examination. On auscultation a loud musical systolic murmur is audible at the base of the heart, having its point of differential maximum intensity at the aortic area, and audible over a wide area of the chest both anteriorly and posteriorly. On passing outwards towards the pulsating swelling the character of the murmur changes; it becomes less loud and musical, till on reaching the pulsating area it becomes a rough, low, systolic bruit. Above the right clavicle only the low systolic bruit is audible. The radial pulses show a marked difference. Both vessels are somewhat thickened. The right pulse is full, regular, and gives a manometric pressure of 134. The left radial pulse is barely perceptible. The other systems are normal. There is no irregularity of the pupils. The voice is clear, and laryngoscopic examination shows the vocal cords freely movable. Examination of the blood gives a negative Wassermann's reaction. On examination with the X-ray screen, and as seen in the plate, a large aneurysm of the descending thoracic aorta is visible in addition to the aneurysm of the subclavian. Under iodide of potash and mercury the patient has improved considerably, and is now practically free of pain.

The points of interest in the case seem to be —

1. The coincidence of aneurysm of the subclavian with aneurysm of the aorta and endocarditis of the aortic orifice of syphilitic origin.

2. The latency of the aortic aneurysm, the existence of which was only proved on examination with the X-rays.

3. The presence of a full pulse on the side where the subclavian was implicated, while on the opposite side the radial pulse was barely palpable.

MULTIPLE AORTIC ANEURYSM, WITH EROSION OF CLAVICLE; EXTENSIVE FALSE SAC; DEATH BY EXTERNAL RUPTURE.

By HAMILTON G. LANGWILL, M.D., F.R.C.P.,
Senior Physician, Leith Hospital;

With Pathological Report
By J. H. HARVEY PIRIE, M.D., M.R.C.P.,
Pathologist to Leith Hospital.

THE following case may be of some clinical interest as an example of the progressive development of aortic aneurysm to a fatal termination in spite of practically continuous hospital treatment, the value of the record being greatly enhanced by the complete pathological report on the condition found after death.

J. R., æt. 33, carter (formerly a soldier), was admitted to Leith Hospital at midnight on 2nd June 1909, complaining of shortness of breath and great pain in the neck and left arm.

Previous History.—Patient was a soldier for thirteen years, and states that when in the army he often felt darting pains through to the left shoulder, but no notice was taken of them. For the last two years he has had much heavy lifting in his work as a carter. He states he had no illness till two years ago, when in Bombay he had "fever" for four days. He left the army the same year and returned home. In February 1908 he was treated in the Royal Infirmary, Edinburgh, "for his heart," and in May of the same year was again in its wards for four months. In March 1909 he was again admitted there for "severe pains in the neck and down the left arm, and breathlessness," and while in the ward (for four months) he states an aneurysm appeared, being noticeable visibly from April, though he had had a "brassy" cough and other signs of its existence before April. The neuralgic pains in the neck and arm had lasted for nine months before his admission to the Infirmary in March 1909, but not severely. He denies all infection of syphilis or any venereal disease. He smoked and drank heavily for many years.

Condition on Admission.—Briefly stated, the patient showed a well-marked visible swelling with expansile pulsation under the left sterno-clavicular joint about an inch and a half in diameter, but on careful palpation the aneurysm appeared to extend from the top of the sternum at its right border (filling the

supra-sternal notch) to the junction of the inner with the middle third of the left clavicle, which seemed almost to disappear into the aneurysm. The skin was of normal colour over the swelling. At times, especially during attacks of pain in the neck and left arm, the left pulse was *retarded;* pressure about 164 during pain, 140 at other times, and equal in both arms; character typically Corrigan. There was a well-marked to-and-fro murmur in the aortic area. No pupil irregularity was ever noticed.

Progress.—For the pain he was given various remedies; at first phenacetin seemed to act better than morphia, but latterly he required a nightly dose of the latter in addition to ammon. bromide during the day, which he took along with regular 40-grain doses of potassium iodide, thrice daily. Erythrol tetranitrate was frequently given for periods, but in spite of constant rest in bed and he was an excellent patient—the swelling steadily increased in size, the trachea being pushed markedly to the right, and swallowing became more difficult. Profuse sweating of the left side of the face and left shoulder region occurred frequently during the severer paroxysms of pain. Six weeks before his death the skin over the swelling became so thin and purple that collodion dressing with pads of wool outside became necessary, occasional staining of the wool from oozing being noticeable. Dyspnœa was not complained of, but the pain became much more continuous with the growth of the swelling. Five days before death oozing became more marked, especially on exertion or coughing, and his temperature for the first time rose (100°-102° F.), but no marked change otherwise occurred until 9 P.M. on the 13th September 1909, when blood began to flow—not in arterial jets—steadily, and soon with a gush, soaking the mattress, &c., the centre of the swelling sinking inwards in a puckered fashion, and death occurred in 35 minutes after the severe bleeding set in, respiration ceasing several minutes before the pulse stopped.

Pathological Report.

Heart.—Left ventricle slightly hypertrophied, its wall being the seat of some fatty infiltration and considerable fibrosis. The valves are all healthy except the aortic, the cusps of which are a little thickened.

Aorta.—The ascending part of the arch is uniformly rather dilated, there is marked atheroma of the wall, especially at the commencement, where the openings of the coronary arteries are narrowed, but extending upwards as high as the origin of the innominate.

The orifices of the three great vessels opening off the aorta are however quite patent, and not interfered with.

Aneurysms.—(1) Just before the opening into the innominate artery there is an opening on the posterior wall, about ½ inch across, leading into a small saccular diverticulum about 1 inch × ¾ inch, lying behind and to the right of the arch. It is firmly attached to, and presses on, the trachea, but not on any other structure. Seen from the inside of the trachea it causes a slight bulging, but no apparent erosion of the tracheal wall.

(2) A second sac takes its origin from the transverse part of the arch by a distinct thick-walled neck about 1½ inches wide. The opening is on the anterior aspect of the highest part of the arch, commences proximal to the origin of the innominate, extends in front of the openings into the innominate and left common carotid, but is perfectly distinct from them. It leads into a true sac whose exact size is obscured by the fact that it has ruptured, and

in addition to being partly filled by laminated clot, is surrounded by organised thrombus in a large false aneurysm. The growth from the aorta has been in the direction of the left sterno-clavicular articulation. It has apparently pressed on the left clavicle, the inner end of which has completely disappeared, leaving the outer 4 inches *in situ*, projecting free into the false sac. The first costal cartilage has also been completely eroded through, the bare ends projecting into the sac. The actual point of rupture of the true sac cannot be made out. The false sac, which is filled partly by soft post-mortem clot, but largely by organised thrombus, extends both above and below the left clavicle in the substance of the trapezius and pectoral muscles. It extends from the middle line in front of the manubrium sterni for 7½ inches to the left, reaching as far as the acromio-clavicular articulation. In a vertical direction its dimension is about 5½ inches, two of these being below the clavicle, the remainder above. The false sac presses on the left subclavian artery, where the latter crosses the first rib. The muscle forming the wall of the sac is infiltrated by blood, and the clavicle, even at its extreme outer end, is largely bared of periosteum, eroded, and softened. The false sac has ruptured through an opening in the skin about 2½ inches from the middle line, the exact site having apparently been determined by the pressure of the sharp end of the outer portion of the clavicle against the wall. This point is rather above the normal line of the clavicle, which has probably been tilted upwards by the weight of the arm.

(3) A third sac opens off the aorta just where it reaches the lower border of the 4th dorsal vertebra by a narrow slit-like opening. This sac has grown chiefly upwards and backwards, and is about 2 inches long × 1½ inches wide. It has caused slight erosion of the 4th dorsal vertebra, and presses also to some extent on the 3rd and 5th. It is in contact with the œsophagus, but does not cause any bulging into its lumen.

CEREBRAL TUMOUR CAUSING SENSORY APHASIA; DEATH BY LEFT-HANDED SUICIDAL CUT-THROAT.

By J. H. HARVEY PIRIE, M.D., M.R.C.P.,
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The subject of this report, J. H., a man of 64, was, from 29th December 1909 to 8th January 1910, under the care of Professor Wyllie in the Royal Infirmary, and I wish to express my indebtedness to Professor Wyllie for permission to use the clinical notes of the case. His complaint on admission was headache and loss of memory of four weeks' duration. For a fortnight before admission the headaches had not been so bad, but the loss of memory had been more marked. He attributed his troubles to the shock of his wife's death. On examination his intelligence was found to be fairly good, his memory for events also fair, but there was marked difficulty in finding words to use when he attempted to describe anything. He miscalled common articles, or could not remember the names of such things as a knife, key, pencil, &c., but was generally conscious almost at once of having made a mistake. His speech was therefore somewhat paraphasic—there was no difficulty in articulation. The sense of hearing was

good on both sides, but he had some degree of word-deafness; for example, when asked to touch his left eye he touched his right ear, and the back of his head for his forehead. The chief difficulty seemed to be with nouns, verbs being better understood and interpreted. Although his sight was not good there was no hemianopia, but there was complete word-blindness, there being no comprehension of written or printed matter. He had also lost the power of being able to write his name, in fact of writing at all, and his attempts to copy writing were very bad. No impairment was observed in his motor functions in either upper or lower extremity; his reflexes were normal, and also his sensory functions. The pupils were equal, and reacted to light and accommodation; the eye-movements were not impaired; the optic discs were normal. There was no vomiting. The other systems showed nothing noteworthy.

The chief clinical features, therefore, were—headache, amnesia verbalis, some paraphasia, some word-deafness, complete word-blindness, and agraphia. He became very melancholic in hospital, and was allowed to go home at his own desire. He committed suicide four days later by cutting his throat. In the interval his son noted distinct weakness of the right side of the body; he tended to fall to that side when walking, and was unable to feed himself with his right hand.

Examination of the brain revealed the presence of an infiltrating glioma on the left side, the size of which makes it rather remarkable that the patient had not more general signs of cerebral tumour, such as vomiting and optic neuritis. The convolutions of the left hemisphere were markedly flattened. The site of the tumour readily accounted, however, for the symptoms which were present; it involved the cortex of the extreme posterior parts of the first and second temporo-sphenoidal convolutions and part of the angular gyrus. The greater part of the tumour lay deeper in the centrum ovale, infiltrating particularly the sub-cortical region of the angular gyrus and the path of the occipito-temporal association fibres. It extended so near to the posterior horn of the lateral ventricle that it is difficult to understand how there was no hemianopia, as the optic radiation, if not actually invaded by the tumour, must have been severely compressed by it. An area of secondary softening extended forwards into the internal capsule, which would account for the right-sided paresis noted at home.

The cut-throat was interesting, as it showed the characters of a suicidal wound made by the left hand in a man naturally right-handed but unable to use his right hand on account of the paresis. The left side of the shirt in front and left sleeve were drenched with blood; there was less blood on the right side, although there was some even over the right hand. The wound showed six gashes in the skin at its commencement on the right side underneath the ear, all opening into the main wound, which sloped downwards from right to left, gradually increasing in depth; the thyroid cartilage was notched, and the trachea was partly cut across, the cut in it sloping downwards to the left, and at its termination considerably undercutting the superficial soft parts. Both external jugular veins were divided, the internal one on the right side being also opened, but the carotid artery was not exposed.

MEETINGS OF SOCIETIES.

Edinburgh Medico-Chirurgical Society.

A MEETING was held on 2nd February, Dr. Byrom Bramwell, President, in the chair.

Dr. Harvey Pirie showed specimens: (1) of multiple aneurysm of the aorta with erosion of the clavicle and rupture through the skin; (2) extensive tuberculosis of the larynx and trachea; (3) left-handed cut throat in a man who was right-handed, but who had weakness of his right hand from a left-sided cerebral glioma; and (4) (with Mr. Wilkie) sarcoma of the testicle with secondary growths.

Dr. Norman Walker showed a case of xeroderma pigmentosum, two cases of lupus erythematosus, and a case of spreading angioma.

Dr. Boyd showed a case of thrombosis with commencing gangrene in a young woman, and a case of multiple aneurysms.

Professor Caird showed a patient from whose stomach he had removed a large hair-ball, which he also exhibited. He also showed a patient after closure of a biliary fistula.

Dr. Chalmers Watson read a paper on "A Rich Protein Diet in Relation to Gout and the Thyroid Gland." In previous papers he had formulated the view that gout is due to a special kind of thyroid activity due to prolonged feeding with excessive protein diet. This diet altered the tissues in such a way that they were rendered specially liable to auto-intoxication, and these two factors constituted gout. Those cases of gout which were benefited by restriction of farinaceous diet were to be explained on the supposition that there was derangement of the pancreas.

Dr. Russell said that the communication had largely resolved itself into a demonstration of certain changes in the thyroid gland in one or two types of animals. He regretted that Dr. Chalmers Watson had limited himself to the thyroid, because other glands and tissues were powerfully influenced by diet. It was difficult to accept the proposition that the thyroid had anything to do with gout or goutiness. The known symptoms of altered thyroid action had no resemblance to gout.

Mr. Wallace read a paper on "Prostatism."

Professor Caird said he did not share Mr. Wallace's dread of the use of the catheter. He agreed that operation was not desirable till the patient was disabled, but he did not regard the mere necessity for the use of the catheter as disablement. Mr. Wade referred to the fact that in the post-mortem room a certain degree of dilatation of the ureters and even of the pelvis of the kidneys was very often to be

found in these cases, and thought that constituted a strong argument for early operation. Mr. Miles said he had known of three cases of death from pulmonary embolism following the operation. He had found the two-stage operation to be an advantage in very septic cases.

Mr. Guy, Dr. Goodall and Dr. Reid gave a communication on "The Blood-Pressure in Anæsthesia," which appears on page 207.

Dr. MacAllum said that the danger of struggling in early anæsthesia was due to a concentrated vapour acting on the cardiac ganglia. He thought there would be considerable difficulty in making the use of oxygen available, especially in private houses. Dr. Stuart Ross referred to the fact that in Johannesburg there had been a reduction of chloroform mortality as the result of the use of oxygen. He had seen many of the authors' observations and had been much struck with the uniformity of the results of ethyl chloride when preceded by gas, while the effects of giving ethyl chloride alone were anything but uniform.

Dr. Goodall, in reply, said he agreed that chloroform depressed the heart directly, but depression through the vagus was of much more importance and much more dangerous. A portable oxygen generator had been recently suggested by Leonard Hill.

Edinburgh Obstetrical Society.

THE fourth meeting of the session was held on Wednesday, 9th February, Dr. Lamond Lackie, Vice-President, in the chair.

Dr. Robertson showed a baby illustrating the result of immediate operation for depressed fracture of the parietal bone during delivery.

Dr. Haig Ferguson showed drawings from another case similarly treated. Both cases gave excellent results.

In Dr. Robertson's case there were marked symptoms of cerebral compression, and small convulsive seizures continued on the opposite side for about 24 hours after operation. No anæsthetic was required in either case.

Dr. Fordyce showed—(1) large ovarian fibroma with twisted pedicle: (2) microscopical slide showing tubercle of the ovary; (3) large uterus removed by vaginal hysterectomy for severe floodings after the menopause.

Mr. E. Scott Carmichael showed—(1) ovary and Fallopian tube strangulated in the inguinal hernia sac of infant, æt. 4 months: (2) villous papilloma of bladder removed by vaginal cystotomy: (3) uterus with submucous fibroid and marked hydrometra removed by supravaginal hysterectomy.

Dr. J. W. Keay showed a cystic tumour of the ovary with complete twist of short pedicle.

Mr. E. Scott Carmichael read a paper on "Some Indications for Vaginal Fixation in Uterine Displacement." From a record of 20 cases personally operated upon, the author believed that the operation of vagino-fixation had a certain sphere of usefulness.

Following the teachings of Martin, operation was performed on patients at all ages during the child-bearing period. In spite of the results obtained by Martin and Dührssen, and their favourable reports of this operation in relation to childbirth, the author had not felt justified in performing it under the age of 40, in his later cases.

The true facts as to the cause of difficulty during childbirth after this operation had not been worked out, and a false impression of the results of the operation had arisen. Anatomically, the operation, if carried out by following the technique of Martin and Dührssen, should not interfere with the expansion of the uterus during pregnancy and dilatation of the cervix during labour. The cases of Martin and Dührssen which had become pregnant subsequently, had borne this out, in that the complications which occurred might have been present had this operation not been performed.

It was of undoubted value in cases of retroversion, prolapsus and cystocele, where the patient would not submit to an abdominal operation, and pessary treatment had proved inefficacious. In fixed retroversion it was of value, where the adnexæ were not involved by the inflammatory processes. In cystocele and mild cases of prolapsus uteri the symptoms could be entirely relieved by vagino-fixation.

In following out the technique of Martin, the uterus should be fixed to the anterior vaginal wall at a point 4½ cm. below the fundus, but if the patient had passed the menopause, the point of fixation might be made nearer to the fundus.

The author concluded by recommending this operation in the above class of cases, but limited it, as far as the age of the patient was concerned, to those over 40 years of age, or after the menopause. In such cases it was of undoubted value, and next to the various methods for shortening the round ligaments, was to be preferred to ventro-fixation or ventro-suspension.

In the discussion following, Mr. Carmichael's plea for vaginal fixation met with general adverse criticism. Dr. Ranken Lyle said medical literature was full of bad results caused at labour by this operation, and referred particularly to Noble's condemnation of it. Personally, Dr. Lyle thought all fixation methods objectionable during the child-bearing period. He had recently seen two deaths resulting from the complications set up by such fixation. The only condition in which he thought the operation might be reliable was after the menopause in cases of bad cystocele with residual urine.

Dr. Haig Ferguson differed from Mr. Scott Carmichael as regards the uselessness of pessary treatment in retro-displacements. In cases

got soon after labour Dr. Ferguson had repeatedly seen complete cure by means of pessaries. Uncomplicated cases required no treatment at all. If more was required than pessary treatment, he considered ventro-suspension the only procedure of complete safety in the child-bearing period. Vaginal fixation, if done low down, did not seem sufficient to fix the uterus. To be sure of keeping the uterus forward one must fix it a good deal higher up than the isthmus, and this was inevitably followed by trouble in child-bearing. In cases with adhesions the field of operation was too contracted to deal properly with them, and abdominal section became necessary. He failed completely to see how vaginal fixation could help cases of prolapse or cystocele.

Dr. Fordyce, Dr. Ritchie and Dr. Lackie also spoke in disapproval of the operation.

Mr. Scott Carmichael, in replying, said that much of the criticism that had been directed against this operation was hardly fair, as many of the bad results might be due to not following the technique laid down by Martin. Out of 1000 cases collected by an assistant of Martin's, 35 returned pregnant. Of these, 29 had normal labours: of the others 5 had complications not specially connected with the operation; in 1 Cæsarean section was required. Personally he had stated that he did not feel justified in doing the operation during the child-bearing period. He could not recall a single cure that he had seen result from pessary treatment. As regards ventro-suspension Kelly had now given it up because of the subsequent complications. Gilliam's operation on the round ligaments was now being performed instead. He did not think vaginal fixation should be done where many serious adhesions of the tubes and ovaries were present, but simple adhesions of the posterior uterine wall could be easily seen and dealt with. The explanation of the benefit derived from the operation in cases of prolapse was to be found in the fact that the uterus never prolapsed in the anteverted position. Martin pointed out that in mild cases of prolapse, if the uterus is fixed forward, prolapse will not recur. As regards the question of recurrence Mr. Carmichael had been able to follow out 12 of his own 20 cases. In 9 the uterus had kept forward, in 3 the displacement had recurred. He thought a fair estimate of cures by the operation was 50 per cent., a result certainly not attainable by pessaries.

Dr. J. W. Keay then read a paper on "A Simple Perineal Operation for Relaxed Vaginal Outlet," illustrated by photographs and diagrams, which will appear in the *Journal*.

Dr. Ranken Lyle, in commenting on the paper, thought this operation very satisfactory in cases of rectocele and complete laceration. He did not now operate for incomplete laceration, as no symptoms resulted. He did not see how such measures could help prolapse, as the uterus was prolapsed long before the perineum was reached.

Dr. Haig Ferguson thought the operation a very simple one and very suitable for relaxed cases, and not so much so for real tears.

Mr. Scott Carmichael remarked that the levator ani muscles were very close together in women who had not borne children, but were widely separated in the relaxed perineum, from which he would expect this to be a very good operation with undoubted advantages. From the anatomical standpoint it was an ideal operation.

Dr. Lackie remarked upon the clearness of the operation as seen in diagrams, and on the apparent simplicity of its performance.

RECENT LITERATURE.

CRITICAL SUMMARIES AND ABSTRACTS.

MEDICINE.

By J. S. FOWLER, M.D., F.R.C.P.,
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Nervous Diseases.

Atonic-Astatic Cerebral Paralysis.—At present three main types of infantile cerebral paralysis are generally recognised—the spastic type, the athetotic or choreatic type, and the cerebellar type, the last characterised by having as its chief feature inco-ordination. Foerster (*Deuts. Archiv f. klin. Med.*, Bd. 98, H. 1-3, pp. 216-244, 1909) draws attention to the existence of a fourth type which has hitherto escaped notice. It is characterised by atony of the muscles, with inability to hold up the head, sit, or stand, and he has accordingly named it "atonic-astatic cerebral palsy." He describes the clinical features of several cases, but it will be enough to give a *résumé* of one of these in order to illustrate the symptoms of the condition. The patient was aged $1\frac{7}{12}$ years: at one year he had convulsions, left-sided hemiplegia which soon passed off, and divergent strabismus, which still persists. The muscles of the legs are absolutely lax but not atrophied, and the passive mobility of the limbs is much exaggerated, allowing them to be moved into quite abnormal positions. The photographs appended to the paper show the legs fully flexed against the front of the trunk, the foot dorsiflexed on the leg, the knees over-extended, and so on. It is to be noted that this atony of the muscles is not associated with paralysis, for the child can move his arms and legs perfectly well. The patellar, Achilles-tendon, plantar and other reflexes are preserved; there is no ankle clonus. The electrical reactions are normal. The patient, however, cannot sit upright, he cannot hold up his head, and when he is helped to stand his legs collapse under him. At the age of $2\frac{4}{12}$ he could hold up his head for a moment or two, at $2\frac{6}{12}$ could sit up with assistance, and at $2\frac{7}{12}$ made efforts to stand. At the age of 3 a renewal of the convulsions and left hemiplegia proved fatal. Details of three further cases are given. The leading features of this atonic-astatic form of cerebral palsy are—(1) extreme generalised relaxation of the muscles with undue extensibility, permitting an abnormal range of passive movement. This atony is present to a more marked degree than in either tabes dorsalis or the

atrophied members in cases of anterior poliomyelitis. In spite of the atony there is neither wasting, alteration of the electrical reactions, nor diminution of the tendon reflexes. (2) Astasia. This is most marked in the muscles of the back and neck, and shows itself by inability to sit or hold up the head. There is, however, no true paralysis, for the patient can turn the head from side to side, or bring it actively forwards. In the same way, when the patient is held in the standing position his legs double up under him, yet he has the power of flexing and extending the limbs as he lies on his back. The essential of the motor disturbance is an absence of the associated contraction of the antagonistic and collateral groups of muscles, which normally occurs when any group of muscles is voluntary thrown into movement. (3) The retention of the deep reflexes serves to differentiate the condition from tabetic and poliomyelitic atony. There is some degree of resemblance to chorea, in which there is an analogous failure of synergic movements, and in which the excursion of the limbs in passive movement is sometimes increased. (4) Atonic-astatic paralysis is, therefore, a typical affection of co-ordination which consists in a failure of the proper synergic and antagonistic muscular contractions to accompany voluntary movements. (5) The symptom-group described is classified under the general head, "infantile cerebral paralysis," firstly, because it is a congenital defect in some cases, and secondly, because the two autopsies which have been made showed a condition of lobar sclerosis. Thirdly, the associated symptoms of infantile cerebral paralysis — mental defect, epilepsy, athetosis, etc.—were present to some extent in all Foerster's cases. He at first looked on the condition, from a clinical point of view, as belonging to the cerebellar type of the disease, but post mortem he found that the cerebellum was intact, and that the chief brunt of the lesion had fallen on the frontal lobes. He therefere associates astatic paralysis with affection of this part of the brain, which, as is well known, stands in some relation to the cerebellum in controlling the function of co-ordination.

Segmental Innervation of the Abdominal Muscles.—Oppenheim was one of the first to direct attention to the symptoms of paralysis of the muscles of the abdominal wall in cases of hemiplegia and spinal injury. He stated that the innervation of the muscles was not segmental—that is, he supposed that the abdominal musculature as a whole was supplied by a number of spinal roots, and that isolated muscles, or segments of muscles, had no special segmental representation in the grey matter of the cord. Goldstein (*Deuts. Ztschr. f. Nervenheilk.*, Bd. 38, H. 1-2, 1909) controverts this view, both from cases of his own and from the work of observers subsequent to Oppenheim's paper. Ibrahim and Strassburger have both described cases of local paralysis—*e.g.* rectus only, or obliques only, as well as partial paralysis of single muscles. This, of course, proves that there is a segmental innervation of the

abdominal muscles, but beyond the mere fact, little is known on the subject, because of the dearth of post-mortem material (Goldstein's case is the second on record). The muscles in question are served by the 5th to the 12th dorsal roots, and it has been thought that the recti are innervated from higher roots than the oblique. Salecker found that in a case of paralysis of the lower third of the transversalis and obliques, the 11th and 12th dorsal segments were atrophied, and the 10th partially so. In another case of Salecker's there was clinical evidence of injury to the cord reaching at least as high as the 10th dorsal, and only the lowest part of the right rectus was affected, along with the oblique muscles. Probably, therefore, the recti are represented on the cord above the 11th dorsal. Goldstein reports two cases. In the first there was fairly widely spread anterior poliomyelitis affecting the muscles of the limbs. The upper part of the abdomen was paralysed, giving the usual ballooning when the patient coughed or strained. The paralysis was greater on the right than on the left side, and besides the obliques, the whole of the right and the upper two-thirds of the left rectus were atrophied. The exact seat of the lesion was not demonstrated, but the association of paralysis of the lower segment of the rectus with the upper segment of the oblique confirms the above view of the relative position of their respective roots of supply. The second case was a fracture of the spine at the level of the 12th dorsal, producing paraplegia and paralysis of the lower part of the abdomen. When the patient tried to raise himself the recti were found to be intact. Post mortem, the lesion was found to be situated below the 11th dorsal segment. From these cases it is concluded (1) Isolated paralysis of a single abdominal muscle, or a segment of a muscle, may occur. The muscles, therefore, have not a multi-radicular supply, but are segmentally represented in the cord. (2) The centre for the recti lies higher on the cord than does that for the obliques. The centre for the lower third of the recti is probably at the level of that for the mid-segment of the obliques. The position of the centre varies a little in individual cases. The lower third of the obliques is probably represented in the 11th-12th dorsal segments; the lower third of the recti in the 10th-11th dorsal or higher.

Treatment of Meningococcus Carriers.—The importance of healthy carriers of meningococci in spreading the infection of epidemic meningitis has been amply demonstrated, but as yet no certain method of disinfecting them is known, and this is the more unfortunate because, though it is almost hopeless to think of dealing with the enormous number of carriers when an epidemic is in full swing, their detection and isolation when the first few cases of the disease occur may prevent its ever assuming epidemic proportions. Bethge (*Deuts. med. Woch.*, 13th January 1910) has had an opportunity of comparing various nasal disinfectants in a circumvented epidemic (9 cases) occurring in an

orphanage. Sixty carriers were found among the personnel of the establishment, and these were divided into six groups for purposes of comparison. Great stress was laid on thorough removal of all mucus from the naso-pharynx as a preliminary to the application of disinfectants, because meningococci are sheltered by the mucus, especially if it is rendered tough, or coagulated, by the disinfectant employed. The six groups of persons were treated as follows:—(1) Ten cases with pyocyanase; 10 cases with hydrogen peroxide; 11 cases with Kolle-Wassermann serum; 13 cases with protargol; 6 cases with 1 per cent. saline only; 7 cases untreated, as controls. The first five groups all received a douche of 1 per cent. saline twice a day, and thereafter the other remedies were applied—pyocyanase and serum as sprays, peroxide as a 3 per cent. solution, protargol as a 1·5 per cent. solution. The results obtained are stated in two forms:—First, the proportion of cases which were, and remained, free from meningococci after one application, viz. pyocyanase, and peroxide, 60 per cent.; protargol, 69 per cent.; serum, 36 per cent.; saline, 50 per cent.; untreated, 28 per cent. Secondly, the average number of days required to disinfect all cases in each group, viz. pyocyanase, 12·7 days; peroxide of hydrogen, 8·6 days; protargol, 9 days; saline, 13·2 days; serum, 12·6 days. On the whole, therefore, 3 per cent. peroxide of hydrogen preceded by irrigation with 1 per cent. saline gave the best results.

Etiology of Acute Anterior Poliomyelitis.—The recent occurrence of epidemics of anterior poliomyelitis in several different parts of the world has occasioned the appearance of a number of papers on the subject. Romer (*Munch. med. Woch.*, 7th December 1909) discusses the etiology of the disease. He was unable to identify any micro-organism in the cerebro-spinal fluid or central nervous system of acute cases, and thinks that it is highly unlikely that any readily recognisable organism (*e.g.* the pneumococcus, or Gram-staining diplococci, as stated by some observers) can be the cause of the disease. Turning to experiments on animals, he found that neither with cerebro-spinal fluid nor blood from cases in the acute stage could he by intra-cerebral injection produce symptoms in mice, rabbits or guinea-pigs, but by using an emulsion of brain substance of an acute fatal case he produced the disease by intra-cerebral injection in an ape. There was an incubation period of a week, and then paralysis developed rapidly, first in one arm, then in the other limbs. The animal died on the second day, and microscopically the brain and cord showed the typical lesions of anterior poliomyelitis (Beneke, *Munch med. Woch.*, 25th January 1910). This highly virulent emulsion was not pathogenic for rabbits, mice or guinea-pigs. No organisms could be grown from the nervous system of the monkey which had been infected; an emulsion of its brain, though harmless to rabbits and mice, produced the disease in a second monkey, after an incubation period of 10 days. Whatever the nature

of the virus, it must be comparatively resistant, for the inoculated material retained its virulence for 48 and 64 hours after removal from the body.

Leiner and Wiesner (*Wien. klin. Woch.*, 20th January 1910) have shown that the virus prepared as above is of a particulate nature, for it does not pass through a suitable filter. They succeeded in infecting apes by injections made into the peripheral nerves as well as into the brain: the paralysis, in the former case, began in the limb supplied by the nerve. Inoculation into lymphatic glands also gave positive results, but inoculation through the epidermis was negative. They also tried some feeding experiments, and some inoculations into the small intestine, but the results, so far, are not conclusive. They were the first to succeed in keeping alive an animal which had developed well-marked symptoms, and noted that there was no tendency towards retrogression of the paralysis. They did not succeed in reinfecting animals which survived. The virus resisted low temperatures better than high ones: it was destroyed by drying. In some animals an atypical form of the disease was produced, characterised by diarrhœa and emaciation, but no paralysis. Histologically, however, hyperæmia and hæmorrhages in the central nervous system, and degeneration of the cells of the anterior horns of grey matter, were made out ("marasmic poliomyelitis").

SURGERY.

The Treatment of Empyema with Aspiration Drainage.

W. S. Schley (*St. Luke's Hospital Reports*, vol. i. 1909) calls attention to the fact that, while probably the majority of cases of empyema recover through simple drainage, a smaller number drag on with sinuses and imperfectly-functionating lungs. He describes the method, based on that of Bryant, which he uses for establishing negative pressure in the pleural cavity. A day or two elapses after operation (in which usually part of a rib has been resected) to allow most of the purulent collection to escape. Then a rubber tube of 35 to 40 French calibre is inserted 2½ to 3 inches within the pleura: it has one or two lateral holes in the part within the chest, and is packed round with gauze. A piece of dentist's rubber dam 4 inches square has a tiny hole cut in the centre, which is stretched over the tube and run down to the chest wall. This rubber sheet is overlapped and fixed by numerous strips of 2-inch adhesive plaster. A pad of cotton-wool round the tube and a bandage are applied. A short glass tube, straight or elbowed, connects the chest drainage tube with a piece of smaller rubber tubing, the other end of which is slipped over the nozzle of a

partially-emptied Politzer bag. The tendency of the bag to expand causes sufficient suction to withdraw the pus and enormously aid the expansion of the lung. Necessarily the whole system must be air-tight. Within about 7 days the lung has generally expanded in an ordinary case, and the tube can be shortened; and the average duration of aspiration is from 16 to 21 days. The apparatus is simple, and requires no attention except the emptying of the Politzer bag once a day or less often; and the patient can go about with the bag under his clothing. The advantages are that it entirely abolishes the otherwise frequent and dirty dressings; that it greatly facilitates lung expansion, diminishes the period of treatment, and prevents persistent sinuses; and that it possibly affects favourably the underlying disease of the lung by the hyperæmic effect produced.

It may be remembered that the late Mr. John Duncan employed a similar apparatus, except that the pleural cavity, tubes, and bag were all filled with fluid, the principle being one of siphonage. The advantage of his method was that the degree of negative pressure could be exactly regulated by the level of the bag, but the method described by Schley is very much simpler. W. J. Stuart.

Gastro-enterostomy for Hyperchlorhydria.

Meunier (*Presse médicale*, 13th November 1909) records four cases of painful hyperchlorhydria cured by gastro-enterostomy, which are of special interest because the cases were observed for years after the operations were done, and the stomach contents were examined at regular intervals to ascertain as far as possible the effect of the operation on the gastric secretion. The symptoms in all four cases were those of severe gastric pain attended with hyperacidity but without pyloric obstruction or gastric stasis. After operation it was found that the evacuation of the stomach was not modified in any way, that the acidity was decidedly diminished, and that intestinal liquid, containing bile and pancreatic juice, was present in the fluid removed after a test meal. This reflux of intestinal fluid continued for some months and then gradually ceased. Following this the acidity of the stomach contents rose again to the abnormal level present before operation, but the patients remained perfectly well. The operation had in short transformed a painful into a painless hyperchlorhydria. Meunier believes that hyperacidity is in itself not a cause of pain, but that pain is caused by the associated spasm and hyperæsthesia. Gastro-enterostomy allays this by allowing a reflux of alkaline intestinal contents, which partly neutralise the acid stomach contents and also cause a reflex diminution of secretion of gastric juice. The additional opening in the stomach does not act, he thinks, by modifying the evacuation of the stomach contents in any way.

J. W. Struthers.

Cancer of the Prostate Gland.

In the special jubilee number of the *Annals of Surgery* (December 1909) H. H. Young gives an exhaustive study of 111 cases of cancer of the prostate gland. The age incidence corresponded with that in benign hypertrophy, two-thirds of the cases occurring between 50 and 70, and only two below 50. Fifty per cent. were associated with simple enlargement; but whereas the latter affected the lateral lobes, it was usually the posterior subcapsular stratum which was carcinomatous. The first symptoms were most commonly increased frequency and difficulty of micturition; in a few cases complete retention was first, and in four hæmaturia. The last symptom was entirely absent in six-sevenths of the cases during the whole course of the disease, since it was the exception for the tumour to involve the interior of the bladder. Pain was generally marked and sometimes severe. Its most frequent sites were the bladder, urethra, and recto-perineal region, but occasionally it was referred to the dorsal, sacral, gluteal, inguinal or scrotal regions or to the lower limbs, thus simulating spinal, renal, or sciatic pain. This does not, as Motz supposed, necessarily indicate a periprostatic invasion. The effect on the sexual powers was more marked than in benign hypertrophy, but there may be no impairment even although the seminal vesicles and vas deferens are full of cancer cells. The seminal vesicles were usually indurated when the patients were seen. Involvement of the glands was exceptional. The inguinal groups were affected in 20 per cent., and the pelvic in a similar number. Metastases often occurred in the osseous system without any palpable invasion of glands. Urinary infection was present in nearly every case. On rectal examination, the most constant feature was the induration of the prostate. The enlargement was usually slight or moderate in degree, and in a third of the cases the surface was smooth, the fascia of Denonvilliers acting as a firm barrier against invasion towards the rectum. In the remainder the surface was rough and nodular. With regard to treatment Young says: "Cure can be expected only by the routine removal of the seminal vesicles, vasa deferentia, and anterior two-thirds of the vesical trigone along with the entire prostate. The operation is not extremely difficult nor dangerous." When the disease is advanced a catheter life should be adopted. If this causes pain, a palliative operation should be done, "in some cases suprapubic cystostomy, but excellent lasting relief of urinary obstruction and vesical pain can be secured by careful conservative perineal prostatectomy."

James Lochhead.

Coley's Treatment of Sarcoma.

In an address on the treatment of inoperable cancer by bacterial toxins, delivered before the surgical section of the Royal Society of

Medicine, Dr. William B. Coley outlined the early history of his method of treatment and the various stages of its development. The methods of preparation of the streptococcus broth, the prodigiosus suspension, and of the combined mixture are given in detail. The final mixture should contain 2·5 mg. of prodigiosus proteid.

The pathological appearances after toxin injection are described as being identical with those following inoculation with the living germ, no matter whether the toxins are injected directly into the tumour or into remote parts of the body. The results following this method showed that in 10 per cent. complete absorption of the tumours has taken place and the patients have remained cured. In others there has been only a temporary improvement, while in melanotic cases no change occurred.

Arguing from the basis that malignant tumours are microbic in origin, Coley concludes that the action of the toxins is to produce certain changes in the blood or serum, which restores the weakened or lost immunity of the tissues, and the sarcoma cell, no longer finding conditions favourable for growth, undergoes a process of degeneration with absorption in some cases and the formation of sloughs in others.

Coley considers that toxin treatment should be adopted in all inoperable sarcomata except melanotic, and in operable cases when sacrifice of the limb is the alternative course; in addition, a post-operative course of injections should be given after the wounds have healed in cases of sarcomata and carcinomata.

A series of cases are reported to show the value of toxin injection combined with conservative operation. By these means subtrochanteric amputation has replaced disarticulation at the hip joint.

Toxin treatment as a prophylactic against recurrence after operation for primary sarcoma is stated to have been most successful. The same treatment has been followed in carcinomata, and the results have been encouraging, but sufficient data have not yet been collected for any definite pronouncement to be made.

In regard to the duration of the toxin treatment, the rule laid down is to continue the injections until the tumour has entirely disappeared, and then to continue with smaller doses at longer intervals for a period of three or four months. If no improvement occurs within five weeks a successful result need not be anticipated.

The dosage depends on the susceptibility of the individual, which must be ascertained by injecting $\frac{1}{4}$ minim, diluted with boiled water, to ensure accuracy, into the buttock or pectoral region. The dose may afterwards be raised to as much as the patient can stand, remembering that the initial dose into the tumour should always be less than $\frac{1}{4}$ of that used elsewhere. Injections should not be repeated so long as the patient has any material rise of temperature. Daily injections, increasing by $\frac{1}{4}$ minim, are given until the desired reaction

(*i.e.* a temperature of 102° to 104° F.) is obtained. As much as 30 minims has been given.

Dr. Coley concludes with a synopsis of his 52 successful cases.

LEWIS BEESLY.

INTRA-DERMAL REACTION TO TUBERCULIN.

Ch. Mantoux (*La presse médicale*, 5th January 1910) reports on the clinical interpretation of the intra-dermal reaction to tuberculin which he has devised. This is a variation of the diagnostic tuberculin tests on the skin, and consists in the injection into the cutis itself of one drop ($\frac{1}{20}$ c.cm.) of a 1 : 5000 solution of Pasteur Institute tuberculin. The reaction, if positive, occurs within a few hours, and reaches its acme at the end of two days. A positive reaction is said to consist in the development of a local œdematous area, pink or bright red in colour, sometimes white, surrounded by a halo of erythema. Pseudo-reactions may be produced by the needle prick itself, but these are said to pass off within the two days. Incomplete reactions occur, principally in cachectic cases, and are marked by their slow development.

In a children's hospital 174 patients of all ages up to 15 years were tested, and over 40 per cent. gave positive results: those of 7 to 15 years gave 82 per cent. positive results. Three hundred poor but not diseased children were tested, and 54 per cent. gave positive results; those of 7 to 15 years gave 82 per cent. positive results. One hundred and eighteen adults, of ages from 15 to 60 years, were tested, and 82 per cent. gave positive results. Fifty-one subjects over 60 years were tested, and 64 per cent. gave positive results.

The author concludes that a positive reaction is evidence of the presence, latent or otherwise, of tubercle; that all those showing a positive reaction are tuberculous; that the test is the most delicate and trustworthy one for demonstrating tuberculous infection; and in clinical work its real value is in showing which cases are *not* tuberculous.

L. C. PEEL RITCHIE.

THE SERUM DIAGNOSIS OF ECHINOCOCCUS CYSTS.

Heinrich Lippmann deals with the serum diagnosis of echinococcus cysts (*Berliner klinische Wochenschrift*, 8th January 1910). He states that eosinophilia is no certain means of diagnosis, as it occurs in other parasitic and non parasitic diseases, nor is it constant in echinococcus affections. In addition, the eosinophilia does not disappear with the excision of the cyst. More recently serum tests have been applied,

and these are of two kinds. Firstly, the precipitation test has been tried, consisting in the mixture of 12 drops of serum with 2 c.cm. of hydatid cyst fluid. A specific precipitin formation, occurring after several hours' contact, has been found in the experiments reported in only three-fourths of the cases in man and in less than half of the cases in animals. The second test is that of complement fixation, according to Bordet-Gengou, which in the 42 cases reported had given positive results. A positive reaction may be obtained after operation, as Weinberg has shown in 16 out of 26 cases, some even after an interval of 4 to 6½ years. Lippmann reports two further positive results from the Klinik of Lichtheim at Königsberg. As antigen, the contents of fresh echinococcus cysts from the sheep immediately after slaughter were employed in every test.

The author discusses the nature of the antibodies present in the serum. He disagrees with the view of Jano that they are antibodies against the toxin of the tænia echinococcus. In the first place, he has shown the antibody to be of the nature of an amboceptor, which excludes the idea of its being an antitoxin. Nor is there sufficient ground for considering the cyst fluid to be really toxic. More probably the antibody results from the passage of minute quantities of foreign albuminous substance through the cyst wall into the circulation. That this is possible has been proved by the finding of typhoid antibodies in the cyst of a patient who had suffered from typhoid. As the quantity of albumin passing must be minimal, large amounts of serum are necessary for the diagnostic test *in vitro*. In view of the slight toxicity of the cyst fluid, the author would attribute the urticaria, collapse, and other serious symptoms which may follow escape of fluid after puncture to the production of an anaphylactic condition.

L. C. Peel Ritchie.

OBSTETRICS AND GYNECOLOGY.

By J. W. BALLANTYNE, M.D., F.R.C.P.,
Physician, Royal Maternity Hospital, Edinburgh.

The Surgical Treatment of Eclampsia.

When, some years ago, the late Dr. Edebohls introduced the practice of renal decapsulation into the treatment first of Bright's disease and then of eclampsia, it seemed to many that perhaps *the* cure of this deadly complication of the pregnant and parturient state was to be found in surgery. This has not turned out to be the case; but it cannot be denied that whereas formerly the medical man had only two lines of treatment open to him in dealing with this dangerous complication of childbirth, he has now a third: medical means and obstetric

measures may now be supplemented by surgical procedures, and the chief of the last named is operation upon the kidneys.

Dr. Lichtenstein (*Zentralbl. f. Gynak.*, xxxiv. No. 2, pp. 33-38, 8th January 1910) is of opinion that the treatment of eclampsia by bringing labour rapidly to an end has reduced the maternal mortality from 25 or 30 per cent. to about 7 per cent., this result being obtained by taking into account large numbers of cases. He thinks that we cannot yet decide which is the best method of rapidly emptying the uterus. But the whole of this improvement is not to be ascribed to the obstetric means employed (*i.e.* to the quick delivery); part of it is due to venesection, intravenous transfusion of saline solution, alkaline treatment, artificial respiration, and morphia. At any rate, Lichtenstein attributes the results in 49 cases of eclampsia treated by him to both the medical and obstetric management; the first 27 of these cases all recovered, but in the remaining 22 there were four deaths, giving a maternal mortality over all of 8·2 per cent. In decapsulation of the kidneys the writer believes that there is a method of dealing with the 8 or 7 per cent. of fatal cases, and of saving at least some of them. To attack this, which we may call the residual, mortality of eclampsia is the pressing problem of the day. Four cases are recorded in detail, three being instances of eclampsia, and one a patient suffering from uræmia and grave nephritis; all were primiparas, and the surgical interference was followed by recovery in the cases of eclampsia, but the uræmic patient died on the sixteenth day of the puerperium. The first patient was at the eighth month of pregnancy when she developed eclampsia; her urine contained casts and albumen (13 per cent.); the membranes were ruptured and the child delivered by forceps; she had six fits before delivery and nineteen post-partum; she was twice bled to the extent of 300 c.cms., and twice had saline transfused (1500 c.cms.); decapsulation of the kidneys was performed 32 hours post-partum, 8 hours after the last fit. At the time when decapsulation was carried out the amount of urine secreted was small in amount (80 c.cms. in 8 hours) and was decreasing; after the operation it at once increased to 720 c.cms. in 14 hours, and was 2150 c.cms. in the 24 hours. Consciousness returned 10 hours after the decapsulation, and the patient left the hospital cured, on the seventeenth day of the puerperium. The second patient presented a very similar clinical picture, save that the Champetier bag was used to dilate the cervix. The third patient (also a primipara) had as many as 33 eclamptic seizures, one of which occurred after the renal decapsulation; she also made a good recovery, although it was two days before consciousness returned. The fourth case was peculiar in the fact that premature labour was induced at the eighth month (by Hegar's dilators, the Champetier bag and forceps) for severe nephritis; during the fourteen days that followed the urinary conditions did not improve, the amount remaining small and

the albumen persisting (varying from 18 per cent. to 6 per cent.); on the fifteenth day the patient took a fit resembling eclampsia; and this was succeeded by 21 others in the 14 following hours, with anuria. She was bled and saline was transfused, but without good effect. From the first fit onwards she was in a deep state of coma. Decapsulation was performed 14 hours after the first fit on the sixteenth day of the puerperium. Two more fits occurred, and death followed in 20 hours. During this time the coma continued and anuria was complete. At the post-mortem total fatty degeneration of the kidneys, with marked anæmia of all the organs, was found; the appearances described by Schmorl as typical of eclampsia were absent. The first three cases may be taken as types of those in which renal decapsulation is likely to prove beneficial: they were all grave cases. In them all the urinary functions were not re-established by means of venesection and transfusion, and in all the termination of labour did not stop the fits. Lichtenstein is of opinion that the third patient would have perished had decapsulation not been performed. It is possible that this operation presents us with another means of dealing with the cases in which eclampsia persists after the emptying of the uterus, and that we may further reduce the maternal mortality of this *opprobrium medicorum*, eclampsia; but further evidence is desirable. Dr. Lichtenstein's paper was read before a gynecological conference at Leipzig, and in the discussion which followed it (*Zentralbl. f. Gynäk.*, xxxiv. p. 47, 1910) Thorn stated that he had twice performed renal decapsulation for eclampsia: on one occasion the fits came on two hours after labour and the patient died the next day: on the other occasion there were slight seizures before labour, followed by severe post-partum convulsions; decapsulation was performed, and the patient recovered. He was rather sceptical regarding the operation. Dr. Franz referred to two cases in which decapsulation was taken into consideration: it was carried out in one instance: both patients died.

Malignant Tumours of the Placenta.

Under this name Brindeau and Nattan-Larrier (*L'Obstétrique*, pp. 885-902, December 1909) group all the tumours of a malignant nature which follow a pregnancy and in which one finds the characteristic elements of placental tissue. Such a tumour may develop either in the organ in which the ovum is primarily fixed (uterus, tube, or ovary) or in a tissue to which the placental elements have been carried as emboli (vulva, vagina, lungs). It is evident, therefore, that these authors are considering the tumours usually denominated in this country chorion-epithelioma or deciduoma maligna. They regard them as originating in the ectoderm of the villi, and as being of fœtal origin. They look on the name malignant placentoma as too

comprehensive, whilst plasmodial carcinoma is too narrow and also inexact; and they think that *placental carcinoma* is to be preferred because it takes account only of the malignant nature and diffusion of the growth. Commonly it is situated primarily in the walls of the uterus, more rarely it develops in the para-uterine organs. In some cases it seems to form from the extra-ovular placental ectoderm after a normal pregnancy; but generally it is only what one may call an intra-maternal graft and an extension of the placental epithelioma, usually known as a hydatidiform mole. Some of the cells of the placental carcinoma are morphologically allied to those of Langhans's layer and others to the plasmodium; but they differ markedly from the normal cells of the placental ectoderm. These cells retain the general physiological aptitudes of the normal elements from which they are derived, but these characters assume a monstrous form. Brindeau and Nattan-Larrier regard a molar pregnancy as a true *cancerous pregnancy*, which sets up in the uterus a series of cancerous fœtal grafts, just as a normal pregnancy sets up a series of normal cellular grafts. Both cases evolve in the same fashion; but in the normal pregnancy the physiological cellular grafts do not tend to invade the tissues, they rapidly show senile changes, they are disseminated to distant parts without multiplying there, and they have no power of building up new tissues; whilst in the placental carcinoma the cellular grafts have the power of invading the tissues, of growing, and of reproducing and reconstituting pieces of placental ectoderm of an abnormal type. In the former case the maternal organism appears to be able to destroy the grafts by degrees, whilst in the latter case the cells of the grafts have so marked a vitality that the maternal tissues degenerate, and are destroyed by contact with them. These conclusions are of considerable importance from the standpoint of the origin and meaning of malignancy.

Carbonic Oxide Poisoning in Pregnancy.

Dr. Tissier narrates a rare case of poisoning with coal gas, in which the affected person was a woman at the full term of her pregnancy (*L'Obstétrique* (N.S.), vol. ii. p. 911, 1909). There is a difference of opinion as to the possibility of the passage of this gas (CO) through the placenta to the fœtus, Högyis and Falk denying it and Lesser affirming it; but Nicloux has reconciled these diverse views, holding that in rapidly fatal cases no time is allowed for the passage of the gas to the fœtus, while in milder cases, or in those which develop gradually, time is given for the diffusion to occur. In the present instance the mother was pregnant for the second time, and had reached the full term, when she decided to commit suicide. At eleven o'clock at night she shut herself up in her room and turned

on the gas; at seven in the morning she was found in a state of coma and was taken to the hospital, where, by means of continuous inhalation of oxygen and hypodermic injections of caffeine, she was resuscitated. In a few hours labour pains came on, and at six o'clock in the evening a dead fœtus was born. The dead infant's appearance at once excited comment, for it had a bright rose or pink colour instead of being white, and on this account the midwives tried, ineffectually of course, to get it to breathe. The autopsy revealed the characteristic carmine hue of the tissues, with no abnormality in the weight or size of the viscera. The spectroscopic examination of the blood, however, did not give the distinctive absorption bands, and did not therefore indicate the presence of carbonic oxide. Nicloux, however, by careful chemical analysis found that only about one-fifth part of the hæmoglobin was oxycarbonated. What, then, was the cause of the death of the fœtus? Tissier still thinks that it was due to poisoning with carbonic oxide transmitted through the placenta; but he is of opinion that a smaller amount was sufficient to kill the unborn infant than would be needed to prove fatal to an adult. In this way also the absence of the spectroscopic result would be accounted for, the gas being in insufficient amount.

Congenital Hernia of the Ovary.

Hernia of the ovary in the inguinal region may be congenital or acquired. Both varieties are rare, and M. Ferro y Ferro has recently reported an instance of the former in an infant eight months old (*La Medicina de los Niños*, xi. p. 17, 1910). The child showed a tender swelling in the left groin, pressure on which led to convulsive attacks. The skin covering it was congested and œdematous. The infant was evidently seriously ill (distension of the abdomen, constipation, vomiting, rapid pulse, and contraction of the abdominal muscles); and the diagnosis of strangulated omental hernia was made. Operation was at once decided upon, and an incision, 2 inches in length, and parallel to Poupart's ligament, was made over the swelling in the groin. Instead of intestine or omentum, the operator found a rounded body with a tubular structure attached to it, and passing from it into the abdominal cavity. It was then evident that the hernial contents were the ovary and Fallopian tube, and it was also clear that torsion had occurred, causing hæmatosalpinx and hæmorrhage into the ovary; the structures, therefore, were removed, the pedicle being ligatured and returned to the abdomen.

Hæmorrhage in Ruptured Ectopic Pregnancy.

Hunter Robb approaches the difficult question of immediate *versus* deferred operation in ruptured tubal pregnancy (*Cleveland Med. Journ.*

July 1909), from both the experimental and the clinical standpoint. From thirty-one experiments upon dogs (cutting the uterine and ovarian vessels) he came to the conclusion that hæmorrhage usually ceases in from 15 to 20 minutes, the hæmoglobin then remaining stationary and indicating that clotting has taken place; and that therefore death in a woman suffering from ruptured gestation was mainly due to shock, and that hæmorrhage *per se* was rarely, if ever, the sole cause. A major operation, however, if performed soon after the rupture, might contribute to the production of a fatal issue. He was in favour of delaying operation till the condition of shock had been tided over. Various reasons are given in support of this conclusion, and it is claimed that the "results obtained by not a few good operators who have waited and carried out the deferred operation are certainly worthy of consideration: their favourable statistics certainly cannot be attributed simply to blind luck."

PATHOLOGY.

By THEODORE SHENNAN, M.D., F.R.C.S.,
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The Nature of Arterial Sclerosis.

J. G. Adami (*Proceedings of the Pathological Society of Philadelphia*, December 1909) discusses the nature of the arterio-sclerotic process. He includes under this term both the diffuse fibrous thickening of all the coats, and the nodular thickening of the intima, which is followed at a later period by degenerative changes in its deeper layers, and considers it chiefly as resulting from syphilis. He discusses the nature of the intimal thickening, shows that it exhibits none of the ordinary earmarks of an inflammation, and regards it as essentially and purely hypertrophic. He is of opinion that this regular development, layer upon layer, of new connective tissue is of the nature of strain hypertrophy, thus differing from Thoma, who regarded it as of nutritive origin, and due to alteration in the rate of blood-flow at the region of bulging of the arterial wall.

The initial lesion is the local weakening and giving way of the media. This causes an increased strain upon the overlying intima, which acts as a stimulus to growth, and the growth continues, not as Thoma held until the concavity is accurately filled and the lumen restored to the *status quo ante*, but until the volume of the new tissue and the resistance that this affords to the mean distending force balances the loss sustained by the weakened media.

If, on the contrary, the giving way be extreme, there results an "overstrain atrophy" of the intima, and aneurysm formation. In the

nodose thickenings, the earlier and deeper placed layers of new tissue gain less and less nourishment, and so are liable to exhibit fatty degeneration and necrosis. If the process continues, Adami holds that new vessels enter the deeply-placed atheromatous area. The necrotic products are absorbed and replaced by granulation tissue, which, later still, contracts, producing the localised depression and scarring so characteristic of syphilitic sclerosis. He applies the same explanation to the ordinary non-syphilitic nodose condition, and to Moenckeberg's type of arterial disease, in which there are areas of giving way and slight sacculation in the main branches of the aorta due to degeneration of the media. It is to be noted that, in disease of the arteries produced experimentally in rabbits by adrenalin, barium chloride, nicotine and other drugs, a constant feature is the giving way of the middle coat, sometimes to such an extent that sacculation, or even sometimes aneurysmal pouches, are produced. Adami suggested at the Toronto meeting of the British Medical Association that less extreme degeneration would be found to result in a more typical arterial sclerosis with hypertrophy of the intima. Since then Klotz, working in Adami's laboratory, has set up arterial disease in the rabbit without the use of any drug whatever, and has found that by merely suspending a healthy well-grown buck by the hind legs for three minutes daily an unaccustomed pressure is produced, for the time, in the thoracic, cervical, and cranial vessels, and reduced pressure in the abdominal and other arteries in the hinder portions of the body. After this was continued for 100 to 120 days, the heart was found greatly hypertrophied: the arch and thoracic aorta dilated, and their walls thin; the carotids were larger than normal, and exhibited a typical irregular intimal sclerosis with pronounced connective-tissue thickening of the intima. Other workers have been able to bring about corresponding changes by somewhat similar means. The important conclusion is reached that high pressure, and high pressure alone, is sufficient to bring about a nodose arterial sclerosis with all its possible dangers. "Like results may ensue when on the one hand the artery has undergone weakening and the blood-pressure is normal, and when, on the other hand, the artery has no preliminary degeneration of its media and the blood-pressure is above normal."

The author discusses other aspects of the problem, for which the reader must be referred to the original paper.

Invasion of the Inguinal Glands by Tetanus Bacilli.

C. A. Porter and Oscar Richardson (*Boston Med. and Surg. Journ.*, 23rd December 1909) report two cases of tetanus in which the bacilli were found in the inguinal glands. The first case was that of a man, æt. 23, over whose foot a cart wheel had passed a week before admission to the Massachusetts General Hospital. Gangrene followed, with ulceration

and lymphangitis. On the fourth day after admission he complained of slight pain and stiffness in the back. On the next day marked trismus was present, and the diagnosis of tetanus was obvious. The glands in the left groin were slightly tender and considerably enlarged. These were removed, and the anterior crural nerve injected with anti-tetanic serum. The sciatic nerve was also exposed and injected. Finally the gangrenous toes were amputated and the cut surfaces cauterised with pure carbolic acid. Next day the spasmodic contractions having increased in spite of the operation, magnesium sulphate was injected into the spinal canal, but on the following day the patient died. Microscopic examination of films made from the glands and from the amputated toes revealed one or two morphologically typical tetanus bacilli, and on anærobic cultivation numerous apparently typical tetanus bacilli developed. A white rat inoculated with culture material died within forty-eight hours, after displaying the typical seal gait characteristic of tetanus in rats.

The second case was that of a boy, æt. 13, whose foot had been punctured by a rusty nail. In spite of immediate attention and cauterisation, slight stiffness of the muscles of the jaws was evident twelve days after the accident. On the thirteenth day there were distinct symptoms warranting the diagnosis of tetanus. In this case, also, the corresponding inguinal glands were removed, and 3000 units of anti-tetanic serum injected into the internal saphenous vein. Thereafter the original wound was excised and the cut surfaces cauterised with carbolic acid. Intra-muscular injections of serum were given every two hours, and chloral, bromide, and morphia administered. The patient recovered, leaving the hospital at the end of three weeks. Cultures were made, as in the other case, with similar results, and rats were also inoculated with a fatal issue. The authors refer to a paper of Julius Schnitzler (*Centralblatt für Bakteriologie*, 29th May 1893), who succeeded in demonstrating in a case somewhat similar to those just described the presence of tetanus bacilli in the inguinal glands by animal inoculation. In this case cultivation failed. They also refer to a paper by Creite (*Centralblatt für Bakteriologie*, 1904, vol. xxxvii. p. 312), who inoculated a piece of spleen, from a fatal case of human tetanus, under the skin of a guinea-pig. The animal died with the hind legs stiff, and from the site of inoculation, which had become gangrenous, bacilli like tetanus bacilli were found. Impure cultures containing similar organisms were also obtained.

This paper is important, seeing that the general opinion and teaching with regard to tetanus is that it is a pure toxæmia, the organisms developing only at the site of inoculation, and the tetanic spasms being the result of absorption of the tetanus toxin, along the sheaths of the nerves. The findings of these authors help to explain the unsatisfactory results obtained in treatment of tetanus cases, and direct attention to further operative procedures by which such cases may be benefited.

Hydrothorax of Heart Disease.

Fetterolf and Landis (*Proceedings of Pathol. Soc. Philad.*, December 1909) bring forward a new explanation of the hydrothorax which sometimes accompanies heart disease. They concern themselves chiefly with the mechanical effect resulting from pressure exerted by the dilated heart, and recognise that before an effusion can occur the presence of other factors may be necessary, *e.g.* toxic, vasomotor, bacterial or metabolic influences, or hydræmia. They point out objections to the theory that the transudation results from pressure upon the vena azygos major, which drains the right parietal pleura. This theory gained additional support from the fact that these effusions are so frequently right-sided, or, when bilateral, are greater upon the right side. When the condition is bilateral it was supposed that the vena azygos minor became secondarily affected.

The authors believe that instead of the fluid coming from the parietal pleura it comes from the visceral pleura, and the outpouring is caused, so far as the pressure factor is concerned, by dilated portions of the heart, particularly of the auricles, pressing upon and partly occluding the pulmonary veins, which drain not only the lung, but also the visceral pleura. Dilatation of the right auricle presses upwards, backwards, and to the right, upon the right end of the left auricle and root of the right lung. On the left side, the auricle, if dilated, compresses the left upper pulmonary vein against the bronchus, and dilatation of the left ventricle compresses the left lower pulmonary vein against the bronchus. These conclusions agree with those advanced by Samuel West (*Diseases of the Organs of Respiration*) and go further, particularly in the direction of explaining the outpouring of fluid into the pleural cavities.

OPHTHALMOLOGY.

By ANGUS MacGILLIVRAY, C.M., M.D., F.R.S.E.,

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The Etiology of Iritis.

An interesting statistical paper on this important subject has recently been published by Jenning and Emory Hill (*Ophthalmology*, October 1909). Five hundred cases in all are reported on, and these are taken chiefly from the clinical records of the Wills Eye Hospital, Philadelphia.

TABLE No. I.—ETIOLOGY OF 500 CASES OF IRITIS.

Cause.	No. of Cases.	Percentage.
Syphilis	307	61·4
Rheumatism	127	25·4
Gonorrhœa	26	5·2
Exposure	7	1·4
Influenza	7	1·4
Tuberculosis	6	1·2
Malaria	6	1·2
Childbirth	3	·6
Typhoid Fever	2	·4
Intra-uterine Inflammation	2	·4
Diabetes	1	·2
Gout	1	·2
Pneumonia	1	·2
Cerebro-Spinal Meningitis	1	·2
Measles	1	·2
Lead Poisoning	1	·2
Rhus Toxicodendron Poisoning	1	·2

It will be seen from the above table that syphilis, rheumatism, and gonorrhœa together caused 92 per cent. of the cases. Of the 307 syphilitic cases, 234 were males and 73 were females. Both eyes were involved in 81 cases, and one eye in 226 cases: 14 cases occurred under twenty years of age, 119 cases occurred between twenty-one and thirty years, 85 between thirty-one and forty years, 45 between forty-one and fifty, and 21 over fifty years. From this it would seem that the majority of the cases of syphilitic iritis occurred between the ages of twenty and forty, the period of life in which syphilitic infection is most frequent. Gouty iritis is conspicuous by its infrequency in Philadelphia as compared with certain districts of England. Our own experience coincides very much with the figures found in Philadelphia. With the exception of a few imported cases, gout in East Central Scotland is not common, which accounts for the very few cases of gouty iritis one sees in practice. Rheumatic iritis, on the other hand, is comparatively common in East Central Scotland, rheumatic affections being plentiful.

TABLE No. II.—SYPHILITIC LESIONS IN 307 CASES OF IRITIS.
LESIONS ELSEWHERE THAN IN THE EYE.

CHANCRE. Date.	No. of Cases.	SECONDARIES. Date.	No. of Cases.
At time of the iritis	1	At time of iritis	56
3 weeks before iritis	2	2 weeks to 5 weeks before iritis	34
1 month to 1 year before	49		
1 to 5 years before	64		
5 to 20 years before	13		
Over 20 years before	7		
	136		90

Tertiaries. Date.	No. of Cases.
Destruction of soft palate	1
Gumma of brain	1
Gumma of orbit	1
	3

Syphilitic Growths on Iris. Date.	No. of Cases.
Within 8 months after chancre	11
Coincident with secondaries on body	10
More than one year after chancre	4
No other history of syphilis	9
	34

These statistics coincide with the commonly accepted view that syphilitic iritis is a secondary rather than a tertiary manifestation, since the iritis occurred within one year of the chancre in 52 cases, and was coincident with various secondary lesions in 56 cases. Thirty-four cases presented syphilitic nodules on the iris. Although such cases are generally called gummatous iritis, the majority of writers claim that the nodules are not true gummata, but are secondary lesions —papillomata or condylomata. It is interesting to note that in only 46 of the cases, or 19·4 per cent., had there been previous attacks of iritis preceding the present attack, which shows the comparative infrequency of recurrences in syphilitic iritis as compared with rheumatic and gonorrhœal forms. This coincides with our own experience.

Complications were noted as follows :—

Descemetitis in 14 cases, keratitis in 13 cases, hypopyon in 4 cases, vitreous opacities in 11, optic atrophy in 3, and neuro-retinitis in 4 cases. In one case staphyloma of the sclera developed six months after the iritis.

Rheumatism, the second most common cause of iritis, was the etiological factor in 25·4 per cent. of the cases recorded. These figures agree closely with those of Norris and Oliver, who regard rheumatism as the cause of iritis in 30 per cent. of cases. In regard to the relative occurrence of iritis in rheumatic patients, Brunson (*Ophthalmic Record*, 1899) states that in 1500 cases of rheumatism only 23 cases of iritis, or 1·53 per cent., were seen. As regards sex in the Philadelphia series of 127 cases, 84 were males and 43 were females, both eyes being involved in 35 cases. Jennings and Hill are of opinion that only those cases of iritis which are accompanied by acute multiple synovitis with fever can be properly classed as rheumatic. Hutchison, on the other hand, states that iritis in association with either acute or chronic rheumatism is a thing which is scarcely ever observed. In the Philadelphia series 10 gave a history of muscular rheumatism, and 55 of articular rheumatism, involving generally the larger joints. In a few cases only one joint was affected, but in the majority there was multiple joint involvement. Six cases gave a history of possibly mixed infection, 2 having had malaria and 4 gonorrhœa. Recurrences were

noted in 70 cases, presenting a striking contrast to the smaller number of recurrences in the syphilitic cases. The iritis was coincident with the rheumatic attack in 22 cases, while in 65 cases iritis followed the rheumatism at intervals varying from a few months to thirty years.

With regard to the 26 cases of gonorrhœal iritis, a clear history of gonorrhœal urethritis was elicited. Ten of these cases had articular rheumatism, either definitely stated to be gonorrhœal in character or occurring at such dates following the urethritis that it was reasonable to consider the joint involvement to be gonorrhœal. The hips, knees, ankles, elbows, and small joints of the hands and feet shared in this involvement. In discussing the question whether or not gonorrhœa produces an iritis without any intervening arthritis, the authors state that some writers claim that a joint affection always precedes a gonorrhœal iritis.

Influenza.—Seven cases in all gave a history of influenza. In 4 of these iritis developed during the attack of influenza, in 1 case during convalescence, in 1 case the iritis had been chronic since the influenza, and pigment deposits covered the anterior capsule of the lens, and in 1 case fifteen months after the influenza iritis was present in a shrunken globe with a sloughing cornea.

In conclusion the authors state that syphilis causes the majority of cases of iritis, rheumatism a large minority and gonorrhœa a small minority, while other general systemic disorders, including acute infections, cause occasional cases. They suggest that an exhaustive inquiry into the past history of every case of iritis might elicit some of these rarer causes in cases which heretofore have been classed as idiopathic.

The Eyelid Symptoms in Exophthalmic Goitre.—Suker (*Ophthalmic Record*, July 1909) considers the homogenetic etiological factor to be a biochemic toxic agent engendered on a perverted physiological thyroid activity, implicating principally the cerebro-spinal and sympathetic system of nerves. This being the basis of his argument, Suker endeavours consistently to explain the lid manifestations on this score.

Before proceeding to analyse the lid symptoms in detail, Suker disposes of the symptom of exophthalmos, because of its direct bearing upon the entire group of lid symptoms. It sustains no causative relation to any of them, but only serves to add to their intensities. Exophthalmos is absent in about 20 per cent. of the cases, and is usually the last of the cardinal symptoms to appear. The relation it sustains to the lid symptoms rests on purely mechanical principles. Two causative theories are worthy of recognition:—(1) Vaso-motor paralysis of the orbital vessels dependent on sympathetic interference, permitting a constant congestion, and (2) eventuating a tonic contraction of Müller's orbital muscle, also ascribable to sympathetic nerve

irritation. Suker considers that the vaso-motor paralysis is the true basis for the persisting exophthalmos, and to some extent also the cylinder-shaped plain muscle cone in which the eye is suspended. Should any of the lid symptoms be present when the exophthalmos recedes they will be considerably modified: but upon the recurrence of the exophthalmos they regain their full intensity of significance.

The exophthalmos may be the only symptom present during the greater part of the course of the disease. Indeed it usually follows the others in point of time rather than precedes them. Whatever etiological rôle it plays in producing any of the lid symptoms sinks into insignificance at the very outset. The lid symptoms are closely allied, still not entirely dependent upon one another, yet they can be traced to mutual causes.

Von Graefe's Sign.—This symptom is not always present, is not necessarily an early symptom, and is not always bilateral. It is not of long duration in all cases, and is not of more real diagnostic importance than some of the others. Though the lid is tardy in following the downward rotation of the globe, it follows the latter in a jerky manner—a so-called epileptoid movement or tremor. In rotation upwards the lid is raised in a jerky manner also, and decidedly in advance of the globe in point of time. During sleep absolute muscular relaxation obtains, and a perfect lid closure ensues. The three characteristics of the von Graefe's sign are:—

1. The moderate encroachment of the lid on the cornea—less than normal for that individual.

2. The jerky downward rotation, arrear in point of time to the globe.

3. The jerky upward rotation, in advance of globe as to time.

These three points differentiate it from any similar lid affection or the so-called pseudo von Graefe, which obtains in certain types of nuclear paralysis and hysteria. The attending exophthalmos always accentuates the sign purely on a mechanical basis.

With regard to the cause of the von Graefe's sign, the author gives us no fresh light. He discusses the various theories, and shows the defects of each, his position being destructive, not constructive.

Stellwag's sign—incomplete and infrequent winking—is perhaps the most insignificant of the lid symptoms, and the most difficult to explain as to its origin. Normal nictitation is subject to variation as to time, frequency and completeness, and because of this the real significance of the symptom has greatly been lost sight of.

Moebius is inclined to assume that Stellwag's sign is a forerunner of the von Graefe, and with the full development of the latter the former reaches its maximum intensity; while with the disappearance of the von Graefe the Stellwag recedes as well. It is seldom associated with the Dalrymple sign—widening of the palpebral

aperture—and the author is inclined to the view that the Stellwag and Dalrymple are but one symptom.

Dalrymple's sign is dependent on the underlying muscle tone, there being an increased tonus in the lid retractors over and above that existing in the lid contractors. The co-existent exophthalmos adds more to the effectiveness of the Dalrymple sign than to any of the others. The author is inclined to think that a Dalrymple sign, to be independent of either the von Graefe or the Stellwag, can only find its origin in the presence of an exophthalmos. Of all the lid symptoms it is the most deceiving and evanescent, the normal lid aperture for any one individual being difficult to determine.

Gifford's sign is the difficult eversion of the upper lid, and is supposed to occur rather early. Sattler denies it any significance, and states that there is no basis for its existence. The sign, however, has been observed by many able clinicians. It rests on the same basis as the three signs mentioned, and is entirely dependent upon excessive stimulation of the sympathetic nerve fibres and the contraction of the superior palpebral muscle.

Suker's Sign.—This sign—the author's—consists in this manifestation:—"While upon downward rotation of the globe the lower lid is gently fixed, the patient is then requested rapidly to rotate the globe upwards while gentle traction is made on the lower lid: the globe now ascends in an unsteady manner, much in the same way as the upper lid does in the von Graefe's symptom." It is just as variable in its appearance as the others, and has been found more often in the absence of exophthalmos than with it, however most often in conjunction with the von Graefe or Gifford.

Conclusions.—From the analysis of the various signs we can discard all the various theories advanced for the causation of these signs, excepting the increased muscle tonus which is brought about by the direct activity of the thyroid toxin either by way of the nerve fibres or directly upon the muscles themselves. All the lid symptoms are dependent upon a stimulation of the sympathetic nerve fibres and the palpebral muscles supplied by them. This view is further substantiated by the fact that paralysis of the sympathetic produces almost the opposite train of lid symptoms. It is, however, passing strange that the iris seldom is involved, though the sympathetic fibres are so profoundly implicated.

NEW BOOKS AND NEW EDITIONS.

A System of Medicine. By Many Writers. Edited by Sir CLIFFORD ALLBUTT, K.C.B. and HUMPHRY DAVY ROLLESTON. Vol. VI. "Diseases of the Heart and Blood-Vessels." Pp. 861. London: Macmillan & Co. 1909.

SINCE the original edition of Allbutt's *System of Medicine* was published so many important changes and additions have been made to our knowledge of the diseases of the circulatory system that the sixth volume of the edition which is now being issued is, in many respects, necessarily entirely new. The more important alterations may be briefly mentioned.

The introductory article on the "Physics of the Circulation" has been revised and extended by Dr. James Mackenzie, to whose influence on this branch of medicine a tribute is paid in the authors' preface. Dr. Mackenzie gives a short yet most instructive account of the many important problems which his own researches have done so much to solve. There is an entirely new article on the "Adams-Stokes Syndrome." The pathological section of this article, from the pen of Dr. Keith, presents a more complete *résumé* of our present knowledge of the subject than any other in the whole of the literature. Professor Osler's observations on the clinical features of the syndrome are drawn mainly from the cases of his own series. Sir Douglas Powell writes on Diseases of the Myocardium and on Angina Pectoris. The article on "Overstrain of the Heart" has been rewritten, and embodies a section by Dr. R. W. Michell, who has enjoyed such favourable opportunities of studying the circulatory system of athletes. The article on "Simple Acute Endocarditis" has been revised by Professor T. M'Crae of Baltimore, and that on "Diseases of the Mitral Valve" has been largely rewritten, and more freely illustrated, by Dr. G. A. Gibson. Functional disorders are discussed by Sir Clifford Allbutt. The classical contribution on Aneurysm of the Aorta by the late Sir William Gairdner is replaced by a characteristic contribution from the pen of Professor Osler.

The new volume fully maintains the high level of excellence which is such a striking feature of the other volumes of the series. It is undoubtedly one of the best and most instructive of all the recent works on the circulatory affections. Its value, however, would have been greatly enhanced if the text had been more adequately illustrated. Dr. Mott's excellent article on "Arterial Degenerations and Diseases" is the only one which is really well illustrated.

A Handbook of Medical Diagnosis: for the use of Practitioners and Students. By J. G. Wilson, A.M., M.D. 408 Text Illustrations and 14 Full-page Plates. Pp. 1435. Philadelphia and London: J. B. Lippincott Co. Price 25s. nett.

This is in some respects a new kind of book. It is much more comprehensive than its title would suggest, for it deals with clinical methods of investigation and their technique, with clinical pathology, with symptomatology from a general point of view, and finally includes a text-book of general medicine on the usual lines, except that treatment is omitted. The book thus practically falls into two divisions. In the first all the aids to diagnosis, both at the bedside and in the laboratory, are described on a plan faithfully modelled on that of the numerous books devoted specially to this subject. In the second the symptom-complexes which constitute the recognised diseases are detailed, again on the conventional lines of the ordinary treatise on medicine. The book is furnished with special plates and many illustrations in the text.

The design of the author is to gather within the covers of a single volume and connect more closely a mass of information which it has been the custom in late years to deal with in separate and special books. Whether that design is practicable or not, its execution in the present volume is not satisfactory. There is no effective correlation of the separate divisions of the book, and the compression of such a mass of data into a single volume has led in many cases to scanty and inadequate treatment of important subjects. This defect is most marked in the earlier portion of the book, where, for example, the question of the estimation of blood-pressure is dealt with literally in a single line, without any account whatever of the modern instruments by which blood-pressure is measured. The book as a whole is unwieldy and disconnected; and though it covers a large field of information, it does not present this body of data in any new or valuable way.

A System of Clinical Medicine. By Thomas Dixon Savill, M.D. (Lond.). Second Edition. London: Edward Arnold. 1909.

Within a few months of the issue of the second edition of his work on Clinical Medicine we have to deplore the death of the gifted author, under peculiarly sad circumstances. In the present edition the arrangement and scope of the work are practically unchanged, but it appears in one instead of in two volumes, owing to the saving of space effected by the lines of type being placed closer together.

The volume is an earnest attempt to describe disease from the standpoint which it presents at the bedside, and in many respects the arrangement which the author adopts is original, and the material

bears the imprint of being the fruit of the writer's own ripe clinical experience.

Each chapter is divided into three parts. In the first place, a prominent group of symptoms, common to a number of different pathological conditions, is described. This is followed by a discussion of all the possible causes that might contribute to these symptoms. Then follows the differential diagnosis, and a clinical description of the various maladies discussed. It will be seen from this somewhat brief description that the difficulties of diagnosis of any given case are represented as they present themselves at the bedside, and that the habits of deduction and of diagnosis by exclusion are inculcated.

The work having been written from a purely clinical standpoint, morbid anatomy and pathology are only referred to in their practical bearing.

The scheme which Dr. Savill had in view of incorporating in one volume both a clinical and systematic review of diseased conditions has been most admirably carried out, and the work is one which is bound to prove of service both to the student and the practitioner.

Arthritis Deformans. By R. Llewellyn Jones, M.B. Pp. 365. Bristol: John Wright & Sons, Ltd.

In an admirable volume Dr. Llewellyn Jones presents his opinions on the notably difficult subject of arthritis deformans.

Beginning with an excellent historical account of this condition, or rather group of conditions, he subsequently attempts a pathological and clinical distinction between the various types included under arthritis deformans. He is desirous of being rid of the loose nomenclature surrounding these various forms, and shows that, etiologically and clinically, rheumatoid arthritis, osteo-arthritis, and spondylitis deformans are distinctive conditions. The etiology of these conditions is at present the difficulty, and from the evidence of others, and from his own investigations, he is inclined to lean towards a toxæmic origin for rheumatoid arthritis, but admits that a positive proof may be still a good way off. The symptoms and treatment are very fully entered into, with a full account of the treatment by thermic waters and electricity as carried out in Bath. As a precise account of the present position of our knowledge of the various forms of arthritis, the book is a valuable one and worth studying.

Selected Papers on Hysteria and other Psychoneuroses. By Professor Sigmund Freud. Translated by A. A. Brill, M.D. Pp. 200. New York: The Journal of Nervous and Mental Disease Publishing Company. 1909. Price 2 dollars.

We have here a serious attempt to present readers of English with an account of Freud's views on various psychoneuroses, as developed by him within the past fifteen years. The papers chosen for translation consist of four chapters from Breuer and Freud's work on *Hysteria*, published in 1895, and six from Freud's collected articles published in 1906 and 1909. At first glance, one feels repelled by the numbers of new terms, or old terms applied in a new way. Further, the translation does not flow smoothly in many places, and although Dr. Brill takes the edge from such a criticism by apologising for the "numerous barbarisms," and by his claim that he at least faithfully reproduces the author's thoughts, nevertheless one knows that even complicated German sentences and abstract themes can generally be rendered into lucid English, with trouble. Freud's work has been so original, so painstaking, so suggestive, that it behoves all who work at psychological medicine to make themselves acquainted with it. He acknowledges his debt to his own teacher and colleague, Professor Breuer, who first started the idea of treatment of hysterical subjects by a *catharsis* of the mind. Freud prefers the term *analytic* to *cathartic*, as descriptive of his method; it is certainly to be preferred from the æsthetic point of view. The underlying idea is that the hysterical manifestations—neuralgias, anæsthesias, contractures and paralyses, convulsions, refusal of food, hallucinations, &c.—are to be regarded as mental injuries transferred to the body. "The active etiological factor in *traumatic neurosis* is really not the insignificant bodily injury but the effect of the fright, that is, the psychic trauma." In like manner, many cases of hysteria can be designated as psychic traumas. By the analytic method, long and patient attempts are made to get the patient to reconstruct her mental history. Hypnotism is not now used by Freud. His patient is awake, lying on her back on a couch, and he sits at her head, asking questions, getting her to fill up gaps in former accounts, aiding the memory. Thus the very origin of the hysteria may be found in some distant event, some strong repression of a natural instinct. If the mind has not had an outlet for emotion by tears, angry expressions, and so forth, its energy may be misdirected and give rise to hysterical symptoms. Freud further shows that the analysis of the mental state has a wonderful result therapeutically. The laying bare of the long-forgotten mental event, repressed from full consciousness at the time of its occurrence, is often enough to free the sufferer from the tyranny of the neurosis. The method requires an infinite degree of patience. Freud says, "The process is toilsome and wearisome for the

physician; it presupposes a profound interest for psychological incidents, as well as a personal sympathy for the patient. I could not conceive myself entering deeply into the psychic mechanism of a hysteria in a person who appeared to me to be common and disagreeable, and who would not, on closer acquaintanceship, be able to awaken in me human sympathy; whereas I can well treat a tabetic or a rheumatic patient regardless of such personal liking." Moreover, many of the investigations, as illustrated in these pages, go into painful matters of sexual history; not many physicians would care about pursuing such enquiries, and it may be doubted whether the effect of resuscitating such buried experiences is altogether desirable.

The chief subjects here treated, in addition to cases of hysteria, are "Psycho-therapy," "Defence Neuro-psychoses," "Anxiety Neurosis," and the "Rôle of Sexuality in the Etiology of the Neuroses."

Further Advances in Physiology. Edited by LEONARD HILL, M.B., F.R.S. Pp. 440. London: Edward Arnold. 1909. Price 15s.

THIS volume is a companion to the one issued by the same editor in 1906, and entitled *Recent Advances in Physiology and Biochemistry.* It is intended, as its title proclaims, to present to its readers an account of certain subjects in physiology which have had material additions made to them in recent years. The first volume dealt mainly with problems of metabolism, secretion and excretion; this one takes up certain subjects more especially relating to circulation and respiration, nerve, muscle, the central nervous system and vision. These are treated by different authors, each of whom has identified himself with his particular theme by the amount of original work which he has himself contributed to it. The book can therefore be regarded as an authoritative exposition. Many of the subjects discussed are of special interest to the clinician. Mr. Martin Flack describes the microscopic anatomy of the heart, and analyses the recent researches which bear upon the myogenic and neurogenic theories of the heart-beat. Dr. Thomas Lewis gives an account of the pulse, especially the venous pulse in man, and of the methods used in recording it. One of the most interesting chapters in the book is that by Dr. Bolton—"On Cortical Localisation and on the Functions of the Cerebrum." Dr. Bolton summarises the histological work of Campbell and Brodmann, and points out how evolution of function is accompanied by cellular increase and development in the grey matter of the cortex. He also gives a very clear account of the reasons put forward by Marie against the localisation of the centre for speech in the position assigned to it by Broca, and supports Marie on histological and pathological grounds.

The editor is to be congratulated upon having devised a means to

bring together the results of recent researches in so readable a manner. A bibliography of the more important recent papers on the subject is appended to each chapter, and will prove of use to those who wish to read more deeply into it.

Elementary Physiology for Teachers and Others. By W. B. Drummond, M.B., C.M., F.R.C.P.(Edin.). Pp. 192. London: Edward Arnold. 1909. Price 2s. 6d.

The growing importance of hygiene among the subjects included in the curriculum of school teachers is the author's excuse for adding yet another to the numerous books on elementary physiology. A sound conception of the principles of hygiene is impossible without the knowledge of a certain amount of physiology, yet the student in training has little opportunity of obtaining any systematic instruction in physiology. Dr. Drummond's book helps to supply the requisite groundwork. Its scope is elementary, its material well arranged, and presented in a lucid and pleasing style. The illustrations are good and well chosen. A few heresies appear in the text, *e.g.* on page 125 it is stated that during swallowing the epiglottis is folded down over the entrance to the larynx, and on page 78 the illustration conveys to the reader the impression that free acids enter the blood-stream from contracting muscle.

A valuable feature of the book is the frequent reference to special conditions which are of importance in the physiology of the growing child. Here the author is at his best, for he speaks with authority. This greatly adds to the value of the book, which is one of the best of its kind, and eminently suited for the purpose for which it is intended.

Exercise in Education and Medicine. By R. Tait Mackenzie, B.A., M.D. Pp. 406. With 346 Illustrations. London: W. B. Saunders Co. 1909.

Young America sets great store upon physical education. The author of the present work is Professor of Physical Education in the University of Pennsylvania, and the fact that other American universities have corresponding professorships is highly significant. Professor Mackenzie aims at giving a comprehensive view of the place which physical exercise should occupy in a complete scheme of education, and a description of the application of exercise to the treatment of abnormal conditions. Thus in successive chapters he deals with the physiology of exercise, massage and passive movements, exercise by apparatus, the German system of physical training, the Swedish system, ju jitsu,

and the Delsarte system. A description of municipal playgrounds and gymnasiums is of much interest, and contains a number of plans showing how the tastes of children of different ages are catered for. Thus in one plan we find that space has been found for a pavilion with shelters, swings for babies and for older children, merry-go-rounds, giant strides, see-saws, sand piles, sliding boards, boys' and girls' gymnastic frames, climbing ladders, wading pools, basket ball and tennis courts, quoits, jumping pits, and a vaulting horse, to say nothing of a hill and cave. Chicago, we believe, was rather late in starting to provide open spaces for the people, having other things to think of, but on someone calling attention to the fact, the corporation decided to make a beginning, and in 1905 spent $4,000,000 on "south side neighbourhood centers." Succeeding chapters deal with physical training in schools and colleges, and the exercises suitable for special classes of children, such as the mentally defective, and the blind.

The second part of the volume, about 170 pages, is devoted to remedial exercise, and the author describes the treatment of deformities such as flat-foot and scoliosis, and the application of exercise to the treatment of disorders of the circulatory system, of nutrition, and of the nervous system.

So much for the scope of the book. We need only say further that it is quite evident that Professor Mackenzie is well qualified for the task he has undertaken by a wide knowledge and a ripe experience. He is no faddist, but tries to do justice to every system he discusses. The illustrations are numerous and of excellent quality. We have much pleasure in recommending this book to all who desire a readable exposition of the value of physical exercise in the promotion of health and the treatment of disease.

The Morphia Habit and its Voluntary Renunciation. By OSCAR JENNINGS, M.D.(Paris). Pp. 492. London: Baillière, Tindall & Cox. 1909. Price 7s. 6d.

The Re-education of Self-Control in the Treatment of the Morphia Habit. Also by the same Author and Publishers. Pp. 32. 1909. Price 1s.

FOR many years the author has made a special study of morphinism, and from his experience has arrived at definite conclusions as to treatment. This consists foremost in an attempt to restore self-control to the *habitué*, assisted by three therapeutic measures—the use of a cardiac tonic, the correction of gastric hyperacidity by Vichy water, and the application of a tonic-sedative in the Turkish bath. His arguments in favour of this treatment are cogent, and he makes out a strong case against methods of restraint and of sudden suppression by atropine, &c. Up to this point

the book is admirably written, but the later portion, consisting largely of diaries and letters, in which minutiæ of treatment are mixed up with entirely irrelevant and personal matters, falls below this standard. These personal narratives are deliberately introduced on the ground that they illustrate the peculiar mentality of morphine *habitués*. They, no doubt, succeed in this, but in the form in which they appear they interrupt the sequence of argument and weaken the unity and cohesion of the conclusions. Apart from this, the author's long special experience of his subject, and the success of his principles of treatment in this most intractable of all drug habits, make the book well worth careful study. The smaller book contains the pith of the matter in the larger, and by way of preface is practically an abstract of its main conclusions.

A Short Handbook of Cosmetics. By Dr. Max Joseph, Berlin. Third Edition. With 151 Recipes. Authorised English Translation. Pp. 87. London: Rebman, Ltd. 1910. Price 2s. 6d.

Throughout the ages the endeavour to preserve and enhance beauty of appearance has been a constant characteristic of the human race, and while a comely complexion goes, as a rule, hand in hand with a healthy body, yet there are numerous individuals who long to obtain this by local and empiric rather than by rational and general hygienic measures. Joseph more than once lays stress on the fact that the whole man must be dealt with if we are to bring the skin into a cosmetically sound state. He alludes to a topic which has recently come into prominence, viz. "that skin disorders very often owe their origin not so much to an increased or diminished movement of the bowels, as to the process of auto-intoxication." Excessive putrefaction of proteids he associates with indicanuria, and traces to this an unhealthy condition of the skin. To obviate this he recommends menthol in the proportion of one and a half grains dissolved in almond oil, and given in capsule form three times a day after meals. He does not allude to the much more scientific method of employing a cultivation of the Bulgarian bacillus in milk. How the skin should be washed, and the various means of modifying the water used for this purpose, mainly by the addition of borax, which he regards as soothing even for the most delicate integuments: or if tone is needed, by toilet vinegars, are concisely considered. While in favour of neutral and centrifuged soaps, he advances the opinion that the manufacture of a superfatted soap is impracticable, on the ground that such free fat would become rancid and irritating. While this was true of the very earliest specimens, makers have now successfully overcome this difficulty. A much more serious matter is his inclusion of cocoa-nut oil among the raw materials utilised in the preparation of soaps. "A combination of cocoa-nut oil and soda constitutes the basis

of many cosmetic soaps." We have reason to believe that this statement is correct, but soaps so compounded are wholly unsuitable for even ordinary toilet purposes, far less for beautifying ones. While in this work many plans and procedures are laid down for removing or ameliorating skin blemishes, methods of concealing these, when their displacement is insuperable, by means of powders, paints, or dyes, are suggested. The formulæ are, on the whole, well selected. Some are drawn from the author's own experience, a large number are chosen from the writings of others, notably from Paschkis's, many are evidently purely empirical. The indications for choice between a number of rival recipes are too scanty, while some, *e.g.* Huile de Mille Fleurs, p. 54, would cost, if made up as prescribed, more than its weight in gold. Possibly this book will prove most useful as disclosing to the family attendant the composition of many widely advertised nostrums. The translation seems to have been carefully made.

American Practice of Surgery. Edited by Joseph D. Bryant and Albert H. Buck. Vol. VI. New York: William Wood & Co. 1909.

In this, the sixth volume of this large and important system of surgery, there is a continuation of the surgery of regions. The first chapter is by Charles R. Turner of Philadelphia, and treats of prosthesis in its relation to the surgery of the face, mouth, jaws, and nasal and laryngeal cavities. It contains a large amount of useful practical information on a subject which is only scantily dealt with in works on general surgery. The section dealing with the use of obturators in cleft palate contains excellent descriptions and instructive illustrations.

The chapters on the Nasal Cavities and Accessory Sinuses, by Harris Peyton Mosher of Boston, represent a veritable treatise on the subject, extending as they do to one hundred and seventy pages. Dr. Armstrong of Montreal is responsible for the section on Diseases and Wounds of the Mouth, Tongue and Salivary Glands. It contains a number of original illustrations, some of them coloured, and deals at justifiable length with the operative treatment of cancer of the tongue, Kocher's and Butlin's methods of operating being specially described and illustrated. Dr. Elder of Montreal writes on the Wounds and Diseases of the Neck. Dr. Shepherd, also of Montreal, contributes a particularly valuable and instructive chapter on the Thymus and Thyroid Glands, with abundant illustrations dealing both with the clinical and the pathological aspects of the subject. Dr. Carson of St. Louis writes on the Thorax and Spinal Column; Dr. Mudd, also of St. Louis, on the Female Breast; and Dr. Graves of Boston on the Female Genitals. Dr. Balch of Boston writes on the Male Genitals—a very instructive and well-illustrated chapter. Dr. Hugh Cabbott of

Boston writes on Gonorrhœal Urethritis, the importance of the subject being thought worthy of ninety-eight pages. Dr. Bloodgood of Baltimore contributes a capital article on the "Surgical Diseases of the Jaws," the illustrations here again being of exceptional merit, and illustrating the pathological as well as the clinical factors, thus tending greatly to facilitate the study of a very difficult branch of surgery, especially that dealing with tumours of the jaws.

We have said enough to show that this, the antepenultimate volume of the series, attains a very high standard of excellence: in our opinion it should be widely recommended as a first-class work of reference.

A System of Syphilis. In Six Volumes. Edited by D'Arcy Power, M.B.(Oxon.), F.R.C.S., and J. Keogh Murphy, M.D., C.M. (Cantab.), F.R.C.S. Vols. II. and III. London: Henry Frowde, and Hodder & Stoughton. 1908, 1909. Price £2, 2s. nett each Volume.

In our notice of the first volume of this comprehensive work on syphilis (April 1909) we were able to express a very high opinion of its value, and a study of the two succeeding volumes, now before us, does not lead us to modify that opinion to any extent. It is perhaps unavoidable in such an exhaustive consideration of the manifestations of a single disease as is here presented, that there should be a degree of overlapping and repetition, but we cannot avoid the feeling that a little judicious editing might have made these faults less evident than they are in the second volume. The first article, contributed by one of the editors—Mr. D'Arcy Power—is devoted to the "Surgery of Syphilis," and occupies about two-thirds of the volume. A short historical account of the disease, extending to fifteen pages, adds nothing of importance to the masterly exposition of the subject contributed by Dr. Iwan Bloch in the first volume; and the last eighty-one pages, on the "Treatment of Syphilis," might have been materially shortened, especially in view of the fact that it is immediately followed by an article of equal length from the pen of such an authority on the subject as Colonel Lambkin. The "Aix method" of treatment is fully described twice (p. 203 and p. 275), and in almost identical words. Of the rest of Mr. D'Arcy Power's article, which deals with the surgical manifestations of syphilis in the various tissues and organs of the body, we have nothing but praise.

Colonel Lambkin's article on the "Treatment of Syphilis" leaves nothing to be desired, and carries conviction by the evidence it contains of extensive personal experience, guided by sound scientific observation and reasoning.

A report on "An Outbreak of Syphilis in a Virgin Soil"—to wit,

the Protectorate of Uganda—by the same writer, furnishes most interesting reading, and leads to conclusions of great value to those who are concerned with the medical administration of our outlying colonies and dependencies.

The concluding chapter on Syphilis in Obstetrics, by Dr. Wm. J. Gow, is an admirable *résumé* of what is known on this subject.

In the third volume the more purely medical aspects of syphilis are dealt with. The names of Osler and Alex. G. Gibson guarantee the standard of the opening article on "Visceral Syphilis," in which the manifestations of the disease in the air-passages, lungs, heart, digestive organs, liver, and kidney are discussed. Dr. Chas. A. Mercier ably deals with the "Clinical Aspects of General Paralysis." The work of Ford Robertson is freely quoted, but is consistently attributed to his distinguished namesake Forbes Robertson. The other articles are on "Yaws," by Professor Aldo Castellani; "Some Medico-Legal Associations of Syphilis," by Mr. Stanley B. Atkinson, whose authority as a medical jurist renders his contribution of great practical value; "Syphilis and Life Assurance," by Dr. E. M. Brockbank; and "Serum Diagnosis of Syphilis," by Dr. Haldin Davis, which furnishes an intelligible exposition of this highly complicated subject.

The illustrations, especially those in colour, are of the same high standard as those in the first volume.

A Text-Book of Surgical Diagnosis. By DANIEL N. EISENDRATH, M.D., Professor of Surgery, College of Physicians and Surgeons, Chicago. Second Edition. Pp. 885. 574 Original Illustrations, 25 in Colour. Philadelphia: W. B. Saunders Co. 1909. Price 28s. nett.

IN the work before us we have a handsome volume, well printed, copiously and artistically illustrated, and in which the subject-matter is, within the limits which the author has set himself, clearly, logically, and even exhaustively expressed. Yet we must confess to a feeling of disappointment when we have had occasion to consult the work in practice. It appears to us that, in common with others who have essayed to present the student with a text-book of surgical diagnosis, the author has failed to distinguish between a description of the signs and symptoms of disease, and the methods of detecting and interpreting these. Every standard text-book of surgery furnishes us with the former, and, so far as we can see, the *raison d'être* of a special work on surgical diagnosis is to exhibit at greater length, and in fuller detail than is possible in a surgical text-book, diagnostic manipulations and methods, and to point out the inferences that are to be drawn from the facts obtained. Such a work should be designed for use in the wards

of the hospital or in the practical class room, or at least as a guide to what is done there, just as the books on medical clinical methods are.

In the work under review only the last forty-five pages are specially devoted to "Methods of Examination," and this section, so far as it goes, leaves nothing to be desired. Our only wish is that it should have been more complete. The technique of lumbar puncture, for example, might have been described, and not disposed of in the first chapter in the legends to two illustrations, in which the patients are figured sitting straight up. The "test-meal," again, is only mentioned in so many words (p. 382), but what it consists of, how and when it is given, and how the produce of the subsequent gastric lavage is investigated, are not described. Œsophagoscopy and bronchoscopy are merely mentioned, and Cammidge's reaction of the urine, in relation to pancreatic lesions, is ignored.

For the rest, there is nothing here that should not find its proper place in a systematic treatise on surgery, although it is only fair to add that in such a setting it would be admirable. We would, however, warn the student against relying on the tables of symptoms in forming a differential diagnosis, and particularly on that on p. 248, in which the first guide given for the diagnosis between chronic mastitis, fibro-adenoma, and cancer of the breast is, that the last-named disease occurs "generally after forty, rarely before that age," and is "*accompanied by cachexia.*" We had thought that the time was long past when the symptom we have italicised was to be relied upon in the clinical diagnosis of mammary cancer.

Our criticism has been directed to the scope of the work rather than to its execution. If we assume the author's standpoint, we are bound to admit that he has furnished us with an excellent exposition of the clinical aspects of surgical diseases and injuries, and with an atlas of clinical surgery of great merit.

Clinical Obstetrics. By Robert Jardine, M.D.(Edin.), M.R.C.S.(Eng.), F.F.P.&S.(Glas.), F.R.S.(Edin.), Professor of Midwifery in St. Mungo's College, Glasgow, &c. Third Edition. With 108 Illustrations and Four Coloured Plates. Pp. xxviii. + 717. London: Henry Kimpton. 1910. Price 21s. nett.

Professor Jardine's *Clinical Obstetrics* grows bigger with each edition, and in many respects stronger. As the writer correctly says, it is a *clinical* work, and of necessity the clinical records must be numerous and detailed; consequently we find in the volume before us no fewer than fifty new cases, including several which Dr. Jardine rightly regards as specially teaching and thought-provoking—the unsuccessful

ones. The introductory chapter has been added to, and the honour of first discovering the true nature of puerperal fever is adjudicated between Semmelweis, Wendell Holmes, Gordon of Aberdeen, and Thomas Kirkland. The statement "except with a macerated fœtus, the uterine contents are aseptic" requires revision, or, at any rate, qualification. The chapters on the Complications of Pregnancy are splendidly illustrated by case-records, and ought to be of great value to the obstetrician; but even in them further experience will doubtless enable the author to add to his clinical material, and so also to the value of his book. The illustrative case of chorea gravidarum, for instance, is not particularly typical. The hæmorrhages of pregnancy are well done; a timely warning regarding the frequency of procured abortion is given, and special reference is made to the "barefaced indecent advertisements which disgrace the pages of so many secular and even, I am sorry to say, of religious papers." The obstetric operations are fully dealt with; but some of the illustrations of the diseases of the new-born infant are sketchy; and something should have been added regarding the various modern methods of preparing cow's milk for infant feeding by Buddisation, Budinisation, and homogenisation. In his next edition Professor Jardine would confer a benefit on his readers if he would number his illustrative cases in serial order and cross-reference them; his present index of cases is good, but might be improved.

Operative Midwifery. By J. M. Munro Kerr, M.B., C.M.(Glas.), &c. London: Baillière, Tindall & Cox.

Hitherto we have had two text-books on Operative Midwifery in this country, those by Barnes and Herman. Both are excellent, and Barnes's was especially good, and indeed the best piece of work he ever did. It was concise, advanced for the time, simple and accurate in its illustrations, and free from the undue theorising which marred much of his work.

Dr. Munro Kerr has the advantage of writing a text-book on a subject in which in recent years great advances have been made. He has had wide clinical experience, and writes judiciously, without adopting extreme views. Through want of space he has excluded much that has found its way into the ordinary text-book. Confining himself, as he does, to his own experience, the tendency is to be dogmatic rather than explanatory; but any definitions and explanations given are excellent.

The chapters on the Use of Forceps, Version, and on Cæsarean Section—the three great operative procedures in midwifery—are well done, and the anatomical points treating on symphysiotomy are full and well illustrated.

One error we notice at p. 179, where the Michaelist rhomboid or

"schöne Raute" is figured. It is not the lower angle of the rhomboid that is the guide to the posterior extremity of the Baudelocque diameter but the two lateral subcutaneous points. To get the proper point for the posterior calliper-knob, one must join these points mentally by a straight line and take the second spine above.

There is no special chapter on antisepsis and asepsis—an unfortunate omission we venture to think, but the whole book does the author and his medical school the highest credit, and will prove to be of the greatest value to the practitioner and specialist.

A Text-Book of Gynecological Diagnosis. By Dr. GEORG WINTER and Dr. CARL REYE. Edited by John G. Clark, M.D., Professor of Gynecology, University of Pennsylvania, after the third revised German Edition. Illustrated by 4 Full-page Plates and 346 Text Illustrations in Black and Colour. Pp. 670 Philadelphia and London: J. B. Lippincott & Co. Price 25s.

THE high position which this text-book held on the Continent, and the reputation of its authors as teachers, has justified its translator in bringing the work more directly within the reach of English-speaking gynecologists.

The practical part of the book, prepared by Professor Winter, although adhering largely to methods in vogue in Germany, presents the most complete system of clinical diagnosis, while the more scientific laboratory work of Reye forms a valuable section in its important bearing upon the etiology, diagnosis and treatment of diseases in women.

The translator has made brief editorial annotations, to adapt his translation to American use, in the form of separate paragraphs enclosed in brackets.

These are of considerable length, as, for instance, an addition of six pages is made to methods of bladder examination, by the inclusion of Kelly's methods. We think this unnecessary, as the value of the book lies in the original methods of the authors.

The translation, from comparison with the German edition, is free, but the editor must be congratulated on having carried out the work satisfactorily, and thereby made an important addition to the English literature of Gynecological Diagnosis.

Myomata of the Uterus. By HOWARD A. KELLY, M.D., Professor of Gynecology, Johns Hopkins University, and THOS. S. CULLEN, M.D., Associate Professor of Gynecology, Johns Hopkins University. Large octavo of 723 pages, with 388 Original Illustrations, 19 in Colour. Price 35s. nett.

WE have before us another monumental work emanating from the Johns Hopkins University, and affording renewed proof of the vitality of that institution. Drs. Howard Kelly and Cullen present us with the results of their experience of uterine myomata, from a number of cases totalling 1674, and extending over a period of twenty years, from the opening of the Johns Hopkins Hospital in 1889 to 1st January 1909.

The authors have done wisely to confine their efforts to a thorough study of their own material, with little or no reference to the vast amount of current literature on myomata. The present volume, therefore, deals almost exclusively with the work done by those connected with the gynecological department of the Johns Hopkins Hospital and University.

It is impossible to consider in a short review all the various points of interest that are discussed and brought out in this volume. Suffice it to say, that it should be in the hands of every gynecologist, no matter what his experience is. He will find here material which will be invaluable to him from a pathological, a diagnostic, and a surgical point of view. The authors do not hesitate to chronicle the mistakes they have made in diagnosis, and the surgical accidents which they have experienced. It is from such data, honestly and clearly recorded, that a surgeon can gain priceless experience and learn to cope with some of the difficulties which he is bound to meet.

The authors' mortality in myoma operations from 1889 to 1st July 1906 was between 5 and 6 per cent. This included all their earlier cases and also many desperate cases, and several associated with malignancy. Just before going to press, they have gone over the histories from 1st July 1906 to 1st January 1909, and they find that in 238 myoma operations the death-rate has been less than 1 per cent.—a distinct evidence of a continued improvement in operative technique.

As was to be expected, myo-sarcoma has received full justice at the authors' hands. In a series of 1400 cases 17 show undoubted sarcoma of the uterus, occurring in, or associated with, myomata; and in 17 other cases, suspicious, gross, or histological pictures were present, but the changes in these were not sufficient to warrant a positive diagnosis of sarcoma. We are in complete accord with the writers in thinking that, as a result of more careful studies, in the next few years many cases of sarcomata developing in myomata will be reported, and that this malignant change will be found to be relatively common.

Everyone will agree with the dictum that sarcomatous myomata present few, if any, distinct clinical features. As seen from a study of their cases, in some instances sarcoma was not for a moment suspected until the uterus had been removed to the laboratory, and even then the growth was occasionally overlooked. No better example of the necessity of carefully examining all myomata at once, could be found than in pathological No. 6421 (page 190).

The writers conclude that the advantages of supra-vaginal operation would appear more than to outweigh the objection that there is an occasional occurrence of malignant changes in or associated with myomata. They strongly urge the careful examination not only of the uterine mucosa for carcinoma, but also the myomata for sarcomatous changes before the cervical stump is closed.

The conclusion of the chapter on the cause of uterine myomata is, "we still know practically nothing as to the origin of uterine myomata." The general impression, however, gained by the authors is one which we have long thought and taught, viz., that myomata are more likely to be the result of sterility than the cause of it. They also show that heredity plays little or no rôle in their development, and they have seen no conclusive evidence that the tumours develop around the blood-vessels.

The surgical treatment of myomata from the pen of such brilliant exponents is, as one would anticipate, fully up to the highest expectations; only the various operative procedures which they have personally adopted are here described. There is no doubt that Kelly is one of the most prominent pioneers in the advancement of the surgical measures now available, and in the simplification of the methods which have resulted so wonderfully, that it is now quite exceptional to find an inoperable case of myoma. All honour and credit are therefore due to him, and one approaches the description of his methods and general technique with special interest.

Abdominal and vaginal myomectomy receive due consideration. Mention is made of splitting up the cervical lips in the vaginal operation when the myoma is still in the uterus, but we are surprised to see no mention made of splitting the uterus further up after pushing up the bladder, which we have successfully carried out in suitable cases.

Abdominal hysterectomy, after all, however, is the most usual operation demanded in myomatous cases. The indications for, and methods of, operating are well described and illustrated, though some ambiguity occurs in the description of the steps of the operation of supra-vaginal hysterectomy, which render it a little confusing to anyone not conversant with the details.

Vaginal drainage is advocated where large raw areas cannot be covered up, and in some cases of pelvic infection. The method o

doing so is very clearly explained, and the dangers of carelessly introducing the vaginal forceps into the rectum or urethra by mistake are very properly enforced by illustrative cases.

The general hints in operations for removal of uterine myomata are most practical.

Vaginal hysterectomy is dismissed in a few words: out of a total of 993 hysterectomies only 24 were by the vaginal route.

We have read this book with genuine pleasure. The accumulation of "several tons of myomatous material" has not been wasted, and the volume is a striking record of the value of thoroughly working up the material which the surgeon has at his disposal.

Undoubtedly its publication adds further lustre to the Johns Hopkins School. The book is magnificently equipped with 388 illustrations, and the illustrators are to be highly congratulated on the truly artistic results, without which the letterpress (valuable as it is) would have been shorn of much of its interest.

Minor Gynæcology. By V. ZACHARY COPE, B.A., M.D., B.S.(Lond.), Surgical Registrar, London Temperance Hospital, etc. Pp. xi. + 274. 11 Illustrations and 30 Figures. London: John Lane, The Bodley Head. New York: John Lane Company. 1909. Price 5s. nett.

DR. COPE'S work is intended for the general practitioner who does not venture into the specialist's field of major gynecology; and it runs through the usual range of diagnosis, affections of the vulva, diseases of the vagina, menstrual disorders, uterine bleeding, uterine displacements, etc. There are several full-page illustrations of pathological states, which are reproduced from photographs and are admirable; but the diagrams and figures of instruments are less satisfactory, and might with advantage have been drawn to scale. As it is, Hegar's dilator and a laminaria tent appear as of the same size. The information is generally correct and is briefly expressed; but elegance is often sacrificed to compression, and the imperative and indicative moods jostle each other in successive sentences in rather a disturbing fashion. The meaning, also, is not always clear, as, for example, in the definition of the Trendelenburg position (it is wrongly given as *Trendelenberg*), in which it is stated that the pelvis is the highest part, whilst it is the knees. In the description appended to Fig. 28, *isthenial* is probably a misprint for *isthmial*; but, if so, there is no reference to this variety of tubal pregnancy in the text. The volume is tastefully bound, and forms a useful addition to the series of practitioners' handbooks.

A Text-Book of Mental Diseases. By EUGENIO TANZI, Professor of Psychiatry in the Royal Institute of Studies of Florence. Authorised Translation from the Italian by W. FORD ROBERTSON, M.D., and T. C. MACKENZIE, M.D. Pp. 789. London: Rebman, Ltd.

THIS is a colossal treatise, but its somewhat forbidding size is redeemed by the fact that it is written by a man of wide culture who gives abundant proofs of a thorough grasp of his subject. On a previous occasion we commented upon the peculiar tendency of some psychiatric authors to pad their volumes with introductory dissertations on psychology and physiology, as is done in this book. The reason for doing so is not very apparent, for the literature of the two last-named sciences is sufficiently extensive and detailed to be within the easy reach of any person who desires to render himself familiar with them or to apply their principles to the study of mental diseases. Further, the literature of psychiatry has in recent years become so voluminous that a busy man finds it sufficiently difficult to digest without the addition of superfluities, however interesting or instructive these may be.

For the matter of the book we have nothing but praise, and the same may be said for the manner of it. While it is by no means a compilation, or wanting in fresh ideas or in original methods of presenting familiar data, there is a total absence of faddism and of that narrow, conservative egotism which, it has to be confessed, is a blot upon the works of many alienists. It is indeed edifying to observe a man of Tanzi's undoubted eminence adopt, without qualification, Kraepelin's description of dementia præcox, apparently because he is convinced that it is as true to nature as our present knowledge will allow us to perceive. On the validity of Kraepelin's new entity, "manic-depressive insanity," he, on the other hand, asserts his independence, but in a dispassionately reasoned manner, free from captious or trifling prejudice, and with a lucidity of diction which must command respect whether it carry conviction or not. His views are so important that we venture to quote one or two extracts. "Though early psychiatry certainly exaggerated the value of the clinical distinction between mania and melancholia, making them the basis of nosographical classification, Kraepelin's endeavour in a diametrically opposite direction is no less forced. His arguments are based upon a connected series of transitions, sometimes evident, sometimes hypothetical, from simple mania to periodic mania, to manic-depressive insanity and circular insanity, and, conversely, from circular insanity to manic-depressive insanity, and thence to periodic melancholia, and from it to simple melancholia. According to this view, it would appear that melancholia and mania are almost the same thing —that is to say, they are two different phases of manic-depressive

insanity, which is the fundamental term of the series." . . . "If this point of view is adopted the result must be that, after a century of recognition, melancholia will shrink into the obscurity of a poorly defined involutional form, and mania will disappear altogether from the list of independent mental diseases. On the ruins of their syndromes there will be raised on the one hand a too widely extended conception of dementia præcox, and on the other a new disease of doubtful nature, and very varied in its manifestations—manic-depressive insanity."

The chapter on Paranoia is excellent. It is, perhaps, the best description that has ever been written. At any rate it is thoroughly comprehensive, graphic, clear, and convincing. The foundation of the "paranoia mental constitution," upon which is built a clinical description of the varieties of the disease, is an artistic achievement which in no way detracts from the scientific value of the conception.

As Dr. Ford Robertson is one of the translators, some interest naturally attaches to the author's views on the etiology of general paralysis. The following short quotation may serve to express his views on this controversial subject:—"If progressive paralysis is due to some form of poisoning, and if this poisoning, though the result of syphilis, cannot be attributed directly to the syphilitic toxines, it is evident that the disease must depend upon a consequent auto-intoxication." About a page and a half is devoted to a note by the translators, in which Dr. Ford Robertson's well-known researches are described in abridged form.

A review of the book in this strain might be indefinitely prolonged, but we shall conclude by remarking that while the work does not apparently aim at originality in any department, it never degenerates into eccentricity of view or unsoundness in teaching, or haziness or weakness of grasp. It is, therefore, admirably adapted to serve as a book of reference for physicians who desire a more advanced view and a bolder treatment of the subject than most English text-books affect.

With regard to the work of translation by Drs. Ford Robertson and Mackenzie, the highest compliment that can be paid to them in acknowledgment of their arduous labours is to say that, so far as the reading of the book is concerned, it might have been originally written in English.

Modern Problems in Psychiatry. By ERNESTO LUGARO, Professor Extraordinary of Neuropathology and Psychiatry in the University of Modena. Translated by DAVID ORR, M.D., and R. G. ROWS, M.D. With a Foreword by T. S. CLOUSTON, M.D., LL.D. Pp. 320. Manchester: The University Press. 1909. Price 7s. 6d.

PROFESSOR LUGARO tells us in his preface that an ignorant public, knowing nothing of the serious and conscientious investigations which

are carried on quietly in the clinics and laboratories, has a tendency "to look on all that appertains to psychiatry, the most prudent clinical opinion as well as the answers of the sibyls, with a scepticism not unmixed with scorn." Hence, although the task is an arduous one, he conceives it his duty "to combat the stultifying effects of these misconceptions which become more dangerous than ever when they are clothed in scientific language, and to attempt to delineate the genuine objects of the science in a brief but honest survey." Doubts may be expressed as to whether, as the result of his labours, the views of the public on the subject of psychiatry are likely to be materially altered, but it may be said at once that British alienists will be grateful to him for a masterly review of our present knowledge of an interesting though difficult subject.

The author begins with a chapter on Psychological Problems, in which he points out the necessity in every mental disturbance to distinguish the *direct* result of the morbid cause from the *indirect* effect which follows the action of the primary disturbance. He discusses at length the conception of determinism and cause, the mechanism of states of consciousness, and the bond between the phenomena of the subjective world and those of the objective world as expressed in the law of *psycho-physical parallelism*. He points out how difficult it is to apply our conceptions of normal psychic phenomena in the examination of insane patients, describing as useless in practice, if not impossible, the suggested method by means of mental tests, and favourably criticising the method employed by Kraepelin.

Under Anatomical Problems we find an interesting account of the methods by which our knowledge of cortical localisation has been attained. First by the experimental methods of electrical stimulation and operative destruction, and more recently by the researches of Flechsig. Flechsig's discovery of the means of classifying the various zones of the cortex by observing in the embryo and infant the periods at which myelinisation of the nerve fibres occurs receives special attention, and his conclusions are accepted by Lugaro as being firmly based upon fact. Then comes a clear and convincing description of the neurone doctrine, with Ramon Y. Cajal's theory of the orientation of the axons or nerve fibres by *chemotropism*, and an explanation of the same observer's *law of avalanche*. The importance of the study of the primary lesions of nerve cells by experiments on animals is insisted upon, but it is pointed out that morbid processes produce conditions quite unattainable by experiment, and therefore nothing can take the place of the complete examination of the encephalon with the object of determining, not only the nature, but the precise extension of the lesions. "An examination which has not been carried out in serial sections is not held to be exhaustive or at all convincing."

The structure and functions of the neuroglia form an interesting

problem. The author advances the hypothesis that the neuroglia possesses antitoxic functions, not only defending the nerve elements from toxins circulating in the blood, but also exercising an antitoxic function against the katabolic products of nervous activity. There are no lymphatic vessels in the central nervous system to drain away such products, and hence the necessity for some method of destroying them in situ.

Under the heading of Pathogenesis we are taught that the primary lesion which determines a psychopathic state is not always to be found in the brain itself, and even in cases in which a cerebral lesion does actually exist, it does not necessarily follow that all the psychic disturbances can be attributed to it.

Interesting hypotheses are presented in regard to the genesis of hallucinations, delusions, and fixed ideas. Hallucinations are, he believes, secondary disturbances; that is, they arise as the result of other disturbances. They are not induced by direct stimuli, but are the product of "an indirect excitation of the sensorial centre, prompted by, and under the co-ordinating action of the representative centres." Delusions are connected with total or partial disorder of the affections. The affective state is altered, either congenitally or by an acquired disturbance, and the affective disturbance is reflected on the course of ideas. "The affective disturbance determines a change of general orientation in that the images are chosen from a too one-sided point of view, and a false outlook on what really exists is the result." Different theories of the genesis of "fixed ideas," or obsessions, are discussed.

The chapter on Etiological Problems, extending to 58 pages, is perhaps the most important in Professor Lugaro's book. He points out that there are but few cases of mental disease in which the disturbance is the effect of a cause which acts directly and exclusively on the brain. He discusses the intoxications—exogenous and endogenous —and the infections, as being most important general causes of cerebral lesions, and he points out that all these may injure the brain, not only directly, but also indirectly through their attacks on other viscera.

The importance of *exhaustion* as a cause of mental disease is discussed; exhaustion being distinguished from *fatigue*.

A distinction between anomalies and predispositions is insisted upon. Both are, in fact, diseases of which the external cause can with difficulty be determined, existing it may be indeed in the progenitors. Degeneration, likewise, he regards as a disease of the stock—a disease initiated by external causes, and developed in a series of subjects in two or more generations.

Lugaro's views on the subject of the hereditary transmission of acquired characters will be found very interesting. Weismann's theory, Darwin's theory of "panganesis," and Galeotti's chemical theory, are

examined and found unsatisfactory. He regards them as simple and provisional, and points out that all such simple theories are insufficient, in that they fail to provide for the large number of negative examples in which all conditions supposed by the theory to be necessary and sufficient can be observed. Lugaro's own view is summed up in the following:—"From every point of view, therefore, the *Darwinian* factor, the natural selection of fortuitous variations, seems to us to be the primary cause of every adaptation, including also the phenomenon of heredity itself. The *Lamarckian* factor, the hereditary transmission of functional hypertrophies, which tends to establish directly and without an excessive destruction of life an equilibrium between the forces of the organism and those of the environment, supervenes secondarily as a late and most complex acquisition in the evolution of life." He suggests that the human brain is the only organ for which a functional hypertrophy and the hereditary transmission of the same would still be useful. Pathological lesions, such as mental diseases, do not tend to become fixed hereditarily; it is suggested, rather, that there are mechanisms developed which hinder their fixation. They are to be regarded as degenerative or injurious fortuitous variations, which tend to be eliminated by different mechanisms. We have here, he considers, to deal with not heredity but degeneration, to which heredity is distinctly opposed. Heredity is a mechanism for preserving the organism—degeneration is a disease of this mechanism. The disease may be recovered from—idiot women have been known to give birth to normal offspring.

In his chapter on Nosological Problems, Lugaro deals with the questions which present themselves in the study of the classification of mental affections. He rejects the idea of a classification based on psychological observation alone. The most diverse symptoms may arise from the same morbid process, according to its localisation. Conversely, whatever be the cause which irritates or destroys a given nervous organ, the symptom complex produced by it will always be the same. It is necessary, therefore, in order that we may have a complete idea of the morbid process, in order that a conception of a disease may be substituted for that of a syndrome, to look beyond the cerebral lesions to the organic processes which produce them, to the primary causes which exist outside the organism. When this connection becomes known, he says, even if only incompletely, the psychological syndrome will be regarded as of quite secondary importance, and the cerebral and extra-cerebral organic process which forms the common ground of psychiatry and general medicine will be recognised as the important factor.

Lugaro's list of mental affections which may claim to be recognised as clinical entities is somewhat restricted. It includes certain forms of idiocy, cretinism, alcoholism, progressive paralysis, and senile dementia.

Epileptic convulsions he regards as symptomatic manifestations of cerebropathic processes. The "mystic adjectives," *epileptiform* and *idiopathic*, he treats with scant respect, and he believes that such an entity as a real idiopathic epilepsy does not exist. He does not quite follow Kraepelin in his clinical conception of *manic-depressive* insanity, pointing out that the two syndromes of mania and melancholia appear sometimes in various other diseases as pure symptoms differing essentially from the manic-depressive insanity in their cause, their course, and their termination. He suggests that there is good reason to surmise that *dementia præcox* "is the expression of a more or less systematised primary degeneration of intra-cortical neurons, which depends to a considerable degree on a predisposition, on a congenital weakness of these systems."

Under Practical Problems the question of the treatment of the insane is discussed in a general way. It is pointed out that, except in mental diseases due to syphilis, to exogenous intoxications, and to thyroid insufficiency, there are no conditions in which we can direct treatment to the removal of the cause. The cause may be unknown, its action may have lain dormant for years, or the indirect mechanism through which it still acts may be unknown. Perhaps the reason why serum-therapy has been so far quite unsuccessful in cases due to alcoholism, pellagra, epilepsy, and general paralysis, is that in such cases "the noxious agent does not produce the mental disease directly, but through extra-cerebral lesions which are not always reparable. Those who look hopefully to serum-therapy for results seem to forget that its application is still exceedingly empirical."

Under asylum administration it is pointed out that in this matter there are great differences between one country and another. In some Spanish asylums, for instance, chains are still in use; in other places, if they have ceased to exist there are thousands of substitutes, and the mode of life is not superior to that of the worst prisons. "The worst asylums in existence to-day, those of Belgium and Spain, are governed by priests." "The last disease on which a priest can form an intelligent opinion is insanity."

This book will be welcomed by British alienists. It is written by one who is, above everything, broad and reasonable in his views, who is cool and temperate in expressing them, and who never allows his enthusiasm as a scientist to run away with his common sense. The book reads easily, and the translators are to be congratulated upon the successful accomplishment of a difficult piece of work.

NOTES ON BOOKS.

This large volume—*Travaux d'obstétrique* (Steinheil)—contains several important obstetric works by the late Dr. Gache of Buenos Aires, and constitutes a fitting memorial of his life-work. A suitable introduction is contributed by Dr. G. Sobre-Casas. Perhaps the most important part of the work is that which treats, in an original and suggestive way, of fecundity in no less than sixty-six countries, beginning with the Argentine Republic, which is in the happy position of having a birth-rate of 35·8 per 1000. Other interesting papers are those on rickets in America, on pregnancy and labour in young and old primiparæ, on Bossi's dilator, on uterine rupture, and on the use of spinal anæsthesia (eucaine and stovaine) in obstetric practice. The work is not only one of considerable intrinsic value; but it also serves to reveal to the obstetricians of Europe the fact that in South America there is a school of midwifery which is capable, when represented by such an able and devoted worker as Dr. Gache, of taking a worthy share in the practice of the art, and of making valuable additions to the literature of the theory of the subject of obstetrics. Dr. Gache's early death is deeply to be regretted.

Dr. Theilhaber's work—*Blutungen und Ausfluss aus dem Uterus: Ihre Ursachen und Behandlung* (Ernst Reinhardt)—deals with a special subject, the causes and treatment of hæmorrhagic and other discharges from the uterus. With Teutonic thoroughness, he treats in turn of the diseases of the perimetrium, of anomalies in the function of the mesometrium (considering at great length the results of insufficient action of the uterine middle coat), of abnormalities of the endometrium, of unusual relations of the blood-vessels and of the Fallopian tubes, of menorrhagia due to ovarian disease, of abnormal relations of the nervous system, of bleeding from malignant tumours, &c. Under the heading of treatment, he discusses the value of ordinary therapeutic measures, and also of the less commonly employed massage and atmocausis. The most important part of the monograph relates to the changes in the uterine musculature and the effects they produce in causing menorrhagia; and this part is illustrated with drawings of microscopic sections of the wall, showing increase in the connective tissue; the mesometrium is unable, by reason of the fibrous tissue developed in it, to contract properly or to maintain the circulation in it, and so, through this *insufficientia uteri*, menstrual irregularities, chronic metritis &c., are produced.

Dr. Samuel West has for long been accepted as an authority on diseases of the respiratory system, and a manual on *Diseases of the Organs of Respiration* (Charles Griffin & Co., Ltd.) from his hand is bound to be of distinct service to the profession at large.

This second edition of his work has been rendered necessary by the immense advances that have been made in recent years in attempts to solve the problem of tuberculosis, and the numerous additions and alterations he has made have brought the pathology and treatment of respiratory troubles abreast of our present-day knowledge.

Though much too extensive and expanded for a student's manual, as a book of reference it is invaluable. A large part of the work is the outcome of his own long experience and observation, and in a number of points he has expounded views not generally accepted. But with time—*e.g.* in broncho-pneumonia—other writers and observers have fallen into line with West, and accepted his pathology and classification.

He discusses freely and ably the vexed question of the relationship of bovine and human tuberculosis, the value of phthisis notification, the use of tuberculin in phthisis, and the latest results as to the open-air and sanatorium treatment of phthisis, and has given us valuable conclusions on these vexed points in treatment.

This paper—*On the Inheritance of the Diathesis of Phthisis and Insanity* by Charles Goring, M.D., B.Sc. (Dulau & Co.)—is number five of the studies in national deterioration at present being published as "Drapers' Company Research Memoirs," under the auspices of the Department of Applied Mathematics of University College, University of London. It is a noteworthy addition to the statistical work which has recently been done upon the relationship existing between heredity and environment. Dr. Goring bases his conclusions upon an examination of the family histories of convicts. The paper finds its *raison d'être* in the assumption that the cases examined represent a really random sample of the population. "If it be objected that consumption and insanity may be more common to criminal than to non-criminal stock, we can only reply that the objection is unsupported by evidence." Without knowing what the evidence actually is, we should not think the objection referred to can be so lightly set aside. In this and in other places Dr. Goring's work seems to need amplification. The chief conclusion arrived at is that heredity is of much greater importance than environment in the causation of both tuberculosis and insanity; and it is remarkable to find that the correlation between parents and offspring in insanity is practically the same as in phthisis. As Dr. Goring says, it is difficult to believe that this correlation can be due to inheritance in the one case, and that in the other it is not due to inheritance but implies infection. The incidence of phthisis in both husband and wife

Dr. Goring explains as resulting from assortative mating based on psychical affinities. The subject of this paper is of great practical interest, and we shall hope to see further contributions from the author.

We note with pleasure the appearance of a third edition of Professor Howell's well-known *Text-Book of Physiology* (W. B. Saunders Co.). It differs from most text-books in the complete absence of dogmatism and in giving a fair presentment of different views on many problems. Not only so, but there are sufficient references to literature to put an inquirer on the track of first-hand information on any part of the subject. It is an encouraging sign of the times that a text-book so remote from any approach to the cram-book should have gained so much popularity with the medical student whose tastes are apt to lie in the direction of the latter. The author has succeeded in making his subject-matter interesting and in many parts fascinating—an art deplorably rare in physiological writings. The book inspires respect rather than criticism, but we would venture to suggest an improvement on the author's classification of leucocytes. The eosinophil leucocyte is classed as a sub-group of the neutrophil polymorphs, while the less numerous and less important basophil is put in a group by itself. Again, the author describes a cell with acidophil granules as a transitional cell. He is doubtless correct if he means a transition between a myelocyte and a polymorph, but, perhaps unfortunately, the term "transitional" is now applied to a variety of large lymphocyte which undergoes no transition.

On page 492 the lettering of a new diagram referred to in the text has been forgotten.

Practical Microscopy, by F. Shillington Scales, M.A., B.C.(Cantab.), (Baillière, Tindall & Cox), is a second edition of *Elementary Microscopy*, published in 1905. The enlargement of the scope of the book with the addition of a considerable amount of new material has justified the adoption of the present title. A chapter has been devoted entirely to photo-micrography; and in all sections the work of revision and addition has brought the present volume up to date. In affording practical information on the use of the microscope with all its modern accessories and refinements, and in its careful and thorough instruction in the general technique of the preparation and section of tissues for microscopic examination, it makes an extremely serviceable handbook, more compact and more convenient than the larger books of pathological technique.

Two years have elapsed since the sixth edition of Halliburton's *Essentials of Chemical Physiology* (Longmans, Green & Co.) was issued. The seventh edition has been thoroughly revised and brought up to

date. By the omission of some of the older material of doubtful value, the addition of much new matter has been possible without materially adding to the size of the book. A new chapter describing the constitution and reactions of some of the simpler organic compounds has been incorporated, and should prove useful to the student by recalling some of the elementary facts of organic chemistry upon which depend the constitution and reaction of the more complex compounds met with in chemical physiology.

The book preserves its original character of being partly practical and partly theoretical: for this reason it is more suitable as a text-book than as a laboratory manual. The first twelve chapters cover work suitable for a junior course, then comes a section devoted to work of an advanced character, including quantitative measurements; lastly, an appendix illustrates and describes the use of certain of the more common instruments used in physiology, and discusses some of the principles of physical chemistry.

The new edition is a valuable contribution to the literature of chemical physiology, and is highly recommended to the student of medicine.

In *Age Incidence, Sex, and Comparative Frequency in Disease* (Baillière, Tindall & Cox) Dr. James Grant Andrew gives an elaborate and exhaustive statistical analysis of 42,503 cases admitted to the Western Infirmary, Glasgow. The diseases are set out in alphabetical order, and for each there are given statistical observations regarding their incidence according to age and sex. The relative frequencies of diseases of special organs are also tabulated. The work is of interest, in being a careful analysis of the class of case met with in the wards of a general hospital, and as indicative of the comparative frequency of some of the rarer diseases, but it is very doubtful whether the observations are such as to warrant the wide application suggested by the title. The most obvious objection to the use of the observations for the wider purpose is that the cases analysed are selected cases, and do not represent a fair sample of all diseases coming within the knowledge of the medical profession, it being reasonable to suppose that chronic ailments and minor illnesses do not form the same proportion of hospital cases as they do of cases treated in general practice. For instance, an examination of the hospital cases shows that empyemas are more than 50 per cent. commoner than cases of acute bronchitis, and that ulcer of the stomach is fully six times as frequent as chronic catarrh of the stomach, both those comparative frequencies being very different from what is found in general practice. The author commends the work as helpful from an "actuarial standpoint;" with that we cannot agree, for actuaries have not the necessary medical knowledge to enable them to distinguish the conclusions which are valid from those which are invalid.

The Bulletins of the Smithsonian Institution (Bureau of American Ethnology—"Physiological and Medical Observations," Hrdlička) furnish rich storehouses of information upon the subjects of which they treat, and the last volume issued (Bulletin 34) contains an enormous mass of carefully-detailed information upon the physical and physiological characters of the Indians of South-Western United States and Northern Mexico.

Following an account of the environment of these aboriginal tribes, data are given as to the food and drink, habits, character, and social conditions. This is in turn followed by a most valuable series of statistics, obtained from adults and children, of the physical and physiological characters presented under many different headings, such as the proportion of the sexes, the diseases to which they are specially liable, their folk-lore, and such like.

The completeness of the observations render the report a model upon which similar investigations in other countries might well be based. The full value of this report cannot be thoroughly appreciated until such work has been done, and comparisons have been carried out: but even as it stands it is full of most interesting information, which will be of help to anthropologists and to medical officers who are inspectors of schools in more civilised countries.

How to Cut the Drug Bill, by A. Herbert Hart, M.D. (John Bale, Sons & Danielsson, Ltd.), is a book full of practical hints, brought out at a time when the increased tax on alcohol must affect considerably the price of drugs.

It is, however, most likely to be useful in a large dispensing practice where a dispenser is kept, as one can scarcely conceive of a busy practitioner in a wide district having the time at his disposal to make his stock infusions, &c. These things are better done by druggists, who naturally must charge for their labour and material. We notice one small slip, where the initials L. C. M. stand alike for Lin. Commune and Lotio Calamin. This leads us to remark on the undesirability of abbreviations, as tending to cause mistakes, and, it may be, disaster.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES AND NEWS.

The Crichton Fellowships.

For some time past it has been the wish of the Directors of the Crichton Royal Institution that the Pathological Laboratory, which was established there in the early nineties by the late Dr. Rutherford, should be developed into a thoroughly equipped laboratory for study and research in mental and nervous disorders. Last year Dr. Easterbrook submitted a special report on the subject, in which it was pointed out that the pathology of insanity embraced perhaps the widest and most difficult and intricate field of scientific inquiry in medicine—a field which could not be overtaken by one worker, however capable and energetic, and that consequently for the establishment of the laboratory on a satisfactory basis at least three workers would be required to deal with the essential investigations in clinical neurology and psychology, including the modern experimental and psycho-analytic methods, and in pathological chemistry, bacteriology, hæmatology, and histology. Further, it was pointed out that owing to the difficulty of obtaining men with the requisite training and experience, and due consideration being given to the question of ways and means, the only practical course was to attract young graduates who had already shown their taste and capacity for medical research in the form of published work, and who had neurological and psychiatrical leanings, to train them as required, by giving them opportunities of studying at first hand the methods of recognised teachers at home and abroad, and, finally, if their work proved satisfactory, to offer inducement to them to identify themselves permanently with the laboratory and the institution. The directors adopted the scheme proposed, and founded three Crichton Fellowships in (1) Clinical Neurology and Psychology; (2) Pathology and Bacteriology, with special reference to the nervous system; and (3) Pathology and Chemistry, with special reference to the nervous system. These Fellowships are of the value of £250 a year each, with board, quarters, attendance and laundry (or an allowance of £50 a year in lieu of these), tenable for one year, but renewable from year to year subject to satisfactory report by an Advisory Committee. Opportunities will be

given for specialised study and training at other hospitals and laboratories at home and abroad, and there is every prospect of the Fellowships becoming more valuable and permanent appointments. The Crichton Fellowship in Clinical Neurology and Psychology has been awarded to Dr. W. J. Maloney, who has been studying during the past winter at University College, London, and at the National Hospital, Queen's Square, where he is at present senior house physician. In furtherance of the Crichton Laboratory scheme Dr. Easterbrook and some of the directors are this month visiting several of the best psychiatrical cliniques on the Continent, and after their return the Fellowships in Pathological Bacteriology and Chemistry will be awarded, if suitable candidates present themselves.

Ringworm.

"THOUGH ringworm is not a disease which is accompanied or succeeded by any physical or mental disability, yet, owing to its contagious nature, and to the disfigurement occasioned, it is found necessary to withdraw from school all children attacked by it, with the result that their education has hitherto been interfered with, frequently for long periods."

The above sentence is taken from the first annual report of the Children's Committee of the Metropolitan Asylums Board (1897-8), and on this foundation has been raised an organisation, on the successful working of which the Board, the Children's Committee, and Dr. Colcott Fox, their consulting dermatologist, may be cordially congratulated.

The first school was opened in February 1901, and accommodation was provided for 160 children. Despite difficulties it was a success. The Board was encouraged to go further, and in February 1903 another school with accommodation for 420 children was opened.

For some years the work went steadily on. Roughly speaking, each year the population of the school was changed, the dismissals (cures) being just about the number of their population, and the admissions being, of course, limited by space.

It is thus interesting to note that under the most favourable circumstances (residence in a boarding school, constant trained supervision under the direction of the greatest British expert on the disease), an average of over twelve months was required for cure, and it should give pause to those on whom pressure is put to certify a case as cured after a few weeks of too often very perfunctory treatment.

In 1905, on the advice of Dr. Colcott Fox, the X-ray treatment was introduced, and very soon a marked change was seen in the figures. In Dr. Fox's report for 1906 he gives the average period of detention of the first hundred cases admitted (in 1901) as nineteen months. The average of the first hundred cases treated by X-rays was 5·73 months, or if the date on which the treatment began is substituted for the date of their admission, 4·49.

In the report for 1907 it is recorded that 737 children were admitted and 673 discharged cured, and this notwithstanding that one block capable of holding 70 children was closed throughout the year. The original school has been closed, and the larger one is now more than adequate for the work. The 1909 report is not yet published, but we learn from Dr. Fox that with an enlarged X-ray Department the work goes on more and more rapidly, other districts are being admitted to the benefits of the school, and the *opprobrium dermatologicum* is in a fair way of being removed.

We quote two sentences from Dr. Colcott Fox's reports—"It might be supposed that in a school where all the children had ringworm, of different kinds, that facts of contagion from child to child would be very frequent, but it is interesting to note that, owing to treatment and the use of head coverings night and day, there does not appear to have been a single occurrence of the sort" (1903).

"I may also report that we experience no difficulty in preventing contagion in the institution" (1904).

Encouraged by these and by the Parisian results, other bodies are following their good example. That much maligned body, the London County Council has tackled the question of favus in the East End where it existed mainly among the Jews, imported with them from the East of Europe.

A favus school was opened in the neighbourhood of the London Hospital, all the known cases were collected, treated (by X-rays) in the hospital, and controlled by the scholastic authorities with the result that favus has been practically exterminated, and the school has been closed for want of pupils.

The Council is now approaching the much larger problem of ringworm, of which disease there are estimated to be at least three thousand cases among the school children of London.

We are glad to note that the Edinburgh School Board is also moving in the matter, and that a school for the education of children affected by ringworm and favus will soon be an accomplished fact. A competent nurse will see that the treatment prescribed by the doctor is faithfully carried out, and there will not be the same pressure to send children back to the ordinary school before the cure is complete.

It has been suggested that the proposed school is not nearly large enough to accommodate all the affected children in Edinburgh, and this is obviously true. But with the improved supervision of the cases and more energetic treatment, we may surely look for much more rapid cures, and we think we may at least prophesy that Edinburgh's unenviable reputation for favus will soon be a thing of the past.

As was inevitable, some opposition was aroused among the residents in whose neighbourhood it is intended to place the school. Nobody

likes an institution of any sort placed next door to him. But the argument that the school will constitute a public danger is visionary: the dangerous cases are those which are not known to have the disease: the risks of a recognised and properly-treated case are practically negligible.

The Cremation Society of Edinburgh.

ONLY those who have toiled in the initiation of this Society know with what trouble this has been accomplished, but at last their labours have been rewarded.

At a largely attended meeting held in the Council Chambers in January, and presided over by the Lord Provost of the City, the Society was formally constituted. The Right Honourable Sir Robert Farquharson, one of the pioneers in the movement, addressed the gathering, and at its close many of those present joined the Society. Although no pressure has been applied, the secretary has already received some hundreds of names of those who are in full sympathy with cremation. The veteran Sir Henry Littlejohn was elected President, and his life-long interest in this movement is well known to all. The names of several distinguished medical men are included in the list of vice-presidents, and a large number of medical men have become members, though there are several names awanting of those whom we should have expected to lead the van in this sanitary advance. Indifference to the fate of our remains should not find a place amongst medical men, for though our bodies can do no harm to ourselves after our death, they may cause much inconvenience and even danger to those surviving us.

The Medical Register.

FOR the first time since 1886 the Register for the current year shows a decrease on the last, the figures being respectively 39,818 and 40,275. The fact that there is no increase is probably due to a lessened entry of students, but a large part at least of the decrease is due to increased stringency in the keeping of the Register. No fewer than 960 names were removed from the Register under Section 14 of the Medical Act, which means that communications from the Registrar failed to find the practitioner at his registered address. As the absence of one's name from the Register might entail very disagreeable consequences, it would be well for all who have changed their addresses and are not quite sure whether or not they intimated the change to the Registrar to consult the current issue of the Register and make sure.

A FURTHER STUDY OF THE BACTERIOLOGY OF SUPPURATION IN THE ACCESSORY SINUSES OF THE NOSE.

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INTRODUCTION.—In the *Edinburgh Medical Journal* for November 1905 we published the results of our investigation into the bacteriology of nasal sinus suppuration and drew certain conclusions from these observations. As some points seemed to require further elucidation, the work has been continued and fresh deductions drawn. In the present series of investigations we have examined the bacteriological condition of forty-three antral cavities which were the seat of suppuration and which were uncomplicated by associated suppuration in any of the other sinuses. We report further upon seventeen cases in which inflammation of the antrum was complicated by a similar condition of the ethmoid or frontal sinuses or of both. In addition, we have examined six frontal sinuses, one frontal mucocele, one orbital abscess, and one case in which the antral orifice was blocked and the cavity was full of mucoid secretion. One dental cyst has also been examined, making a total of seventy patients from whom specimens have been obtained. Eight of these patients have also furnished teeth which have been examined for the comparison of bacteria found in them with the bacteria found in coincident sinus suppurations. We report our observations under the following headings:—I. The bacteriology of sinus suppuration, including a comparison between recent and more chronic cases of uncomplicated antral suppuration, and the assignment of predominance to special micro-organisms in individual instances. II. The causation of fœtor. III. The pathways of infection. IV. The bacteriology considered from a clinical standpoint; and V. The conclusions which we consider warranted by the facts.

I. BACTERIOLOGICAL TECHNIQUE.—The collection of the specimens for examination was undertaken by one of us (A. L. T.) and the bacteriological work was conducted by the other (C. J. L.). The specimens were obtained from patients in hospital and in private

practice, and comprised instances of both acute and chronic conditions. The specimens were, in most of the cases, obtained direct from the cavity or from washings, and not by posturing the patient. The pus was collected either in sterile tubes or on sterile swabs enclosed in sterile tubes. It was transmitted by post to the laboratory, so that its examination began on the day following the collection. On its arrival, culture media were inoculated and direct films were afterwards prepared on clean slides. The routine method consisted in the inoculation of blood-serum, agar, and broth, both for aerobic and for anaerobic cultivation, and, in addition, of glucose agar and glucose broth for anaerobic cultivation. In certain cases, such as those with influenzal history, an agar medium spread with blood or mixed with serum was utilised. The serum agar used in the previous investigation (*op. cit.*) was not so frequently employed; on the other hand, blood-serum and blood-agar were utilised more freely and proved quite good substitutes. The primary cultures having been made, the direct films were next stained and examined microscopically. One film was stained by the Ziehl-Neelsen method for the detection of tubercle bacilli. Another film was stained by Gram's method and examined for the presence of micro-organisms. There was generally no difficulty in finding several varieties of bacteria in the direct film, and in this way assistance was obtained as to the varieties to be looked for in the cultures and as to the organisms which showed numerical preponderance in the pus itself. Both aerobic and anaerobic cultures were made in every case, because in the former investigation (*op. cit.*) anaerobic culture was not invariably tried; it was hoped that in this series an estimate of the proportion of cases in which strict anaerobic organisms occur would be obtained. The inoculated media were incubated at blood heat (37° C.). The aerobic cultures were examined after one or two days' incubation, films were stained from all the cultures and compared with the direct films from the pus. If the tubes of blood-serum and agar did not furnish pure cultures of one or more organisms, the growth was plated out in order to separate the different varieties. The broth was always plated out, generally on agar on the second day. The plates were inoculated by spreading the culture over the medium with a platinum spreader. The plates were incubated at the same temperature (37° C.), and from them subcultures were made of the different organisms present. It was sometimes necessary to repeat the plating process more than once in order to obtain pure cultures. Further tests were then devoted to the identification

of the cultural characters of the various organisms, to questions of their pathogenicity and to the observation of fetor production. Films were generally stained for preservation and many of these have been photographed. Reproductions of these photographs will be published in a future paper. The anaerobic cultures were subjected to a similar procedure, but in their case longer periods of incubation were given. The original cultures inoculated from the swab were placed in a jar from which the oxygen was absorbed by alkaline pyrogallate. The jar was corked and further sealed by wax. The cultures were allowed to grow for four or five days before the jar was opened, they were then examined and, if they showed any organisms other than those already noticed in the aerobic cultures, plate preparations were made. Glucose agar plates were spread and cultivated in an atmosphere of purified hydrogen gas in Bulloch's apparatus. To ensure that no air should be contained in the Petri dishes themselves, the covers were removed and the plates were inverted and inserted on the shelves of a plate-rack. When the apparatus was full of hydrogen the supply was cut off and any oxygen, in any remaining air that might be present in the chamber, was absorbed by passing in some caustic soda solution on to pyrogallic acid in a dish at the foot of the chamber. The whole apparatus was put into the incubator after being securely sealed and was kept at 37° C. for four or five days. The plates were then removed, any fetor noted, and the colonies on the glucose agar were examined, subcultured, and tested as to their identity and pathogenicity; occasionally a repetition of the plating process was required and carried out, though it was attended with difficulty in that these organisms are apt to die out. For the most part anaerobic organisms flourished but feebly and their colonies were apt to be small and hard to find. Some of them did not live long enough to permit of full determination of their characters. We think that with some of these anaerobes symbiosis may be a factor in growth, and that some cultures have died in the endeavour to get the organisms to grow separately.

Investigation of Pathogenicity.—The pathogenicity of many of the cultures was tested by inoculation into animals. The animals chiefly used were guinea-pigs, but mice and rabbits also served for this purpose. The inoculations were generally subcutaneous but occasionally intra-peritoneal. The results of such experiments must be interpreted in the light of other known facts in each case. In some cases no organism was pathogenic for the guinea-

pig when thus tested, though more than one variety had been isolated from the pus. In other cases we have found two or more organisms actually pathogenic after isolation and subculture from the pus. It must be remembered that the process of isolation in pure culture and the subsequent preparation of a culture for inoculation may take several days, especially in the case of anaerobes, so that there is opportunity for some of these organisms to decline in virulence before the test is applied. For this reason some strains of organisms which might have been expected to show virulence on animals failed to do so. Immediate inoculation of the pus itself might have shown some organisms to be pathogenic which later in subculture from the pus produced little or no sign of pathogenicity. Positive results in cultural experiments are of great value, but they will not bear exaggerated interpretation. Chronic cases may show organisms pathogenic to animals, but it is not therefore certain that these organisms were responsible for the origin of the human condition. They may have gained access to the cavity after the inflammation has been started by other organisms. Where the duration of a case is measured by years it is certain that the flora of the cavity will vary during the illness, and a sample of pus at one time will not give exactly the same organisms as those obtained at another time. Amongst the secondary organisms there might well be some pathogenic to animals but not responsible for the origin of the complaint.

A. *Suppuration of the Antrum of Highmore, the other sinuses not being involved.*—Under this heading there were forty-three specimens examined from forty-three cavities. The organisms found in the pus were of numerous varieties, the most common forms being the cocci, either pneumococci, staphylococci, or streptococci. It is characteristic, however, of antral pus to contain numerous varieties of organisms, and indeed it is seldom that specimens of the pus from different patients agree entirely in their bacterial flora. Streptococci were found in thirty-three, and staphylococci in thirty-four, of the forty-three cavities. These cocci, however, were not all of the pyogenic type, and their characters will be further discussed in a later paper. The pneumococcus was present in thirteen of the forty-three cavities. The numerical proportion of these three groups of organisms differs considerably from that noted in the previous paper (*op. cit.*), the pneumococcus being found much less frequently in the present series. The percentage of cases showing streptococci is much the same in the two series, and the same may be said in regard to the staphylococci. It is

common to find in antral pus diphtheroid bacilli and occasionally the bacillus of diphtheria itself. The members of this group which are most frequently met with are the bacillus of Hoffmann, the bacillus xerosis, the bacillus coryzæ segmentosus, bacillus septus and others, to which the generic title of pseudodiphtheria bacilli may be given. Examples of these types were present in sixteen of the forty-three cavities. The coliform bacilli occur in certain cases, and in this group we include not only Bac. coli, typical and atypical, but the bacillus of Friedländer and other organisms with similar general characters. This group was represented in nine of the cases. Another set of bacteria, which we may term the putrefactive group, are recognised in antral pus with considerable frequency. Of these organisms the bacilli named proteus, fluorescens, cloacæ, fæcalis and aureus, are the most common forms. Examples of these were present in ten of the forty-three cavities. The mesenteric group of bacilli is represented in seventeen of the cases. Its members consist of four varieties—ruber, vulgatus and fuscus, and also that termed niger, for which another name is Bac. gangrenæ pulpæ. These organisms show minor differences, but grade into each other so that it is sometimes difficult to assign a particular strain to its proper variety. The varieties ruber and vulgatus appear to be of less significance than the varieties fuscus and niger. The two latter are much more offensive in culture, and in some cases account for the presence of fœtor. Moreover, the niger variety is frequently, and the fuscus variety occasionally, pathogenic to guinea-pigs, while we have never found the other two kinds pathogenic. The organisms isolated from antral pus, and identified by their cultural characters as bacillus mesentericus, may differ from their type in regard to Gram's stain. Typically these organisms retain the stain and are Gram-positive, but certain strains we have met with in antral pus lose the stain rather easily and may even appear Gram-negative. Since the cultural characters are distinctly those of the bacillus mesentericus the variation in staining does not appear to be a sufficient reason to doubt their identity. Anaerobic organisms of various kinds, both bacilli and cocci, were present in nineteen cavities, while organisms of buccal and dental habitat were found in twelve cavities. Prominent anaerobic organisms were the bacillus perfringens, the bacillus ramosus and bacillus serpens, whilst amongst those associated with the mouth were bacillus buccalis maximus, bacillus necrodentalis and bacillus gangrenæ pulpæ besides the salivary streptococci.

There is a group of Gram-negative diplococci, of which micrococcus catarrhalis may be taken as a type, and representatives of this group were found in eleven cavities. It is not considered necessary to detail here the differences between the various cocci which make up this group. Other organisms were occasionally met with, such as the bacillus tuberculosis, the bacillus influenzæ, the micrococcus tetragenus, the bacillus mucosus and bacillus rhinitis atrophicans.

While this is a somewhat extensive list, it does not purport to form a complete catalogue of the bacterial flora of antral suppuration. It does, however, give a fair impression of the groups of organisms which are most likely to be seen in cultures from such pus.

Comparison of Organisms in recent and more Chronic Cases of Uncomplicated Antral Suppuration.—The forty-three cases are divided into two groups, the recent comprising eight cases, and the more chronic or long-standing, thirty-five cases. The qualification for inclusion in the group of recent cases is that the discharge had not persisted for longer than three weeks. Our analysis of the bacteriology shows that, as in the previous investigation, the streptococci were more frequently associated with chronic purulent conditions than with recent infection. Of eight recent cases five, or 62 per cent., showed streptococci, but of thirty-five chronic cases there were twenty-eight, or 80 per cent., showing streptococci: staphylococci were present in 75 per cent. of recent cases and 80 per cent. of the chronic cases, but these figures include all kinds of staphylococci. Pyogenic staphylococci were present in four of the eight recent cases and in fifteen of the thirty-five chronic cases. Pneumococci were rather more common in recent than in long-standing cases, being present in three, or 37·5 per cent., of the recent as compared with ten, or 28·5 per cent., of the chronic cases. We note a marked difference in the prevalence of anaerobic bacteria in the two groups. Of the eight recent cases only one showed a bacillus which we had reason to think was a strict anaerobe, and in this case it was not possible to exclude the causative agency of more common aerobic organisms. In the thirty-five chronic cases anaerobic organisms were found in eleven instances, a notable contrast to the recent cases. The coliform bacilli were not observed in any of the recent cases, but were present in 25 per cent. of the chronic cases. The diphtheroid bacilli were found more frequently in chronic cases, though not entirely absent from the recent ones. Bacilli known to occur with

frequency in tooth troubles were recognised only in the long-standing cases. No recent case showed such organisms, but twelve of the thirty-five chronic cases showed one or other organism of this kind.

The Organism or Organisms regarded as Predominant in the Uncomplicated Antral Cases.—An attempt has been made to assign the cause in each case to one or more of the organisms present. We have taken into account (1) the pathogenicity of the organisms as ascertained by experiment upon animals; (2) the numerical preponderance of the different kinds of organisms in the films and in the cultures made directly from the pus; (3) the comparisons of the organisms found in the antral pus with those found in the teeth or in the nose of a patient suspected of dental or nasal infection respectively; and (4) the occurrence, comparatively rare, but illuminating when present, of only one species of organism in the pus films and cultures.

Recent Cases.—Of the eight recent cases two were pneumococcal; one of these showed a pure culture of the pneumococcus, and in the other the cultures were practically pure also, the only other organism present being a yeast. Three cases were undoubtedly influenzal in origin, for in them the bacillus influenzæ was present in the films, and in two of the cases it was isolated in the cultures. It is possible that other cases also had an influenzal origin, but at the time the specimens were submitted the bacillus of influenza had died out or was not present in the swab. Pyogenic cocci were present in the remaining three recent cases, and in two of these the micrococcus catarrhalis was also present. In the recent cases evidence of dental infection was absent.

Chronic Cases.—None of the thirty-five chronic cases yielded a pure culture of only one organism, so that in the chronic cases predominance had to be assigned on other evidence than pure culture. In fifteen of them we think that it was possible to assign the cause of the suppuration to one organism, viz. to bacillus coli in six cases, to the pneumococcus in four, to streptococci in two, to the bacillus influenzæ in one, to staphylococcus aureus in one, and to the tubercle bacillus in one. In the other twenty cases there occurred combinations which were more difficult to elucidate. Combinations of streptococci and staphylococci, of streptococci and pneumococci, or of all three kinds of cocci, were met with, and it is then not easy to differentiate the causative organisms. To the conjoint action of streptococci and staphylococci we assigned three cases, and to the conjoint action of

streptococci and pneumococci one case. Twelve cases, all clinically dental in origin, showed organisms common in decaying teeth, and we regarded these cases as due to such organisms, though in many of the specimens streptococci or other organisms were also present. Two other cases, classified also as dental infections, were bacteriologically attributable to anaerobic organisms, but these particular anaerobic bacilli we have not as yet demonstrated in cultures from teeth. Of the two remaining cases, both showing Gram-negative diplococci combined with non-pathogenic organisms, one had originated in an attack of influenza, but the pus at the time of examination showed no influenza bacilli. Without evidence of pathogenicity, it was difficult to assign these two cases to a special organism, but we think that the Gram-negative diplococci may have had some causal relation to the condition. The Gram-negative diplococcus in one of these cases was the ordinary micrococcus catarrhalis known to be associated with coryza, and in the other it was a similar organism with slight cultural differences from the recognised type of micrococcus catarrhalis.

So far, we have considered the predominance of special organisms in particular cases, making allowance for various considerations. Looking at the series of uncomplicated cases as a whole, we observe that out of eight recent cases two were probably due to organisms whose virulence was not capable of proof by experiment on the animals available, since these organisms did not produce in the animals any symptoms. Of the other six recent cases, five yielded virulent organisms, their virulence being demonstrated by experiment. The sixth case yielded a pure culture of the pneumococcus, and its failure to prove actively pathogenic may have been due to some experimental error. We may consider that in practically all recent cases the organisms are virulent.

Out of thirty-five chronic cases, twenty were proved by experiment to contain virulent organisms. This is a much smaller proportion than in the acute cases, but it is probable that the proportion will vary in different series of chronic cases according to the varieties of bacteria which happen to be present. Cultures of coliform bacilli and of staphylococci are more easily proved virulent than is the case with cultures of pneumococci, streptococci and anaerobic bacilli.

B. *Suppuration of the Antrum of Highmore complicated by a similar condition of one or more of the other sinuses.*—We

have examined seventeen specimens of the pus from seventeen antral cavities, complicated in ten cases with ethmoidal suppuration, in two cases with frontal suppuration, in four cases with both ethmoid and frontal suppuration, and in one case with ethmoidal and sphenoidal infection. As usual in these suppurations, cocci were present in all cases. Thirteen cavities showed streptococci of various kinds. Ten cavities showed staphylococci, but of these only five were pyogenic staphylococci, in the remaining five cases the staphylococci were of different varieties. Pneumococci were present in five cavities. Other organisms found were coliform and diphtheroid bacilli, Gram-negative diplococci like micrococcus catarrhalis, the bacillus of Friedländer, bacillus rhinitis atrophicans, bacillus pyogenes fœtidus, and anaerobic and dental organisms. None of these cavities contained pus which was mono-organismal; all yielded impure cultures. The predominant organisms vary greatly, and in most of the cases there were several organisms implicated. Three only of the seventeen cases may possibly have been dental. If we contrast this percentage of possible dental cases with that found in chronic uncomplicated antra, the difference is striking. Where more than one sinus is affected, the pathway of infection is probably through the nasal chamber. There is more likelihood of the other sinuses infecting the antrum than of the antrum infecting the higher sinuses. In the complicated cases the coliform bacilli were frequently present, being found in eight cases, and probably playing a predominant part in six of them. The other two cases showed, in addition, a streptococcus, which was probably causal. One case associated with atrophic rhinitis showed the diphtheria bacillus, and the pyogenic cocci accounted for the rest.

The pathogenicity results in this series of seventeen complicated cases showed that virulent organisms were obtained in fourteen. The large proportion of positive results in cases which were chronic in duration is due to the number of these cases which yielded coliform organisms, such as do not easily lose their virulence to guinea-pigs. The streptococci and the coliform organisms were more prominent than the staphylococci and the pneumococci in this series.

C. *Suppuration in the Frontal Sinus alone.*—Examination was made of two frontal cavities, of which one was recent and one was old-standing. The recent case showed the pneumococcus and streptococcus pyogenes, the latter being found pathogenic. The chronic case was staphylococcal, but showed also the bacillus of

Hoffmann and bacillus mesentericus. Pus from the frontal sinus presents, as a rule, fewer varieties of bacteria than pus from the antrum. It is more easy to assign predominance to one organism, and it appears that cocci of one kind or another are generally responsible.

D. *Complicated Frontal Sinus Suppuration.*—Four chronic cases of this description were examined, in all of which the antrum was affected, while in one the ethmoid sinus was also involved. In one case the streptococcus pyogenes, in the second the pneumococcus, and in the third a staphylococcus was the causal organism. The fourth case presented a different picture; in it the antrum had been the seat of a dental infection, and the pus from the frontal sinus showed a considerable variety of organisms. There was reason to believe that in this case the antrum had infected the frontal sinus, because the pus from both showed the presence of cocci, and of an anaerobic bacillus, the bacillus ramosus of Veillon and Zuber. This organism is not common in uncomplicated frontal sinus suppuration. The bacillus mucosus was also present in this case.

As to the pathogenicity of the organisms in the six frontal sinus cases, the acute case yielded a virulent culture of streptococcus pyogenes. Of the five chronic cases, complicated and uncomplicated, two showed virulent organisms. In both cases these were staphylococci, but, in one case probably infected from the antrum, there was in addition a pathogenic bacillus.

E. *Special Cases.*—None of the four special cases (mucoceles, cyst, &c.), yielded common pyogenic organisms. All four were mono-organismal, and no two were alike in their bacterial flora. We propose to reserve for a later paper the detailed description of these organisms.

So far attention has been directed to the varieties of organisms met with, to the contrast between recent and chronic cases, and to the predominant organisms present. The causation of fœtor in antral suppuration will next be discussed.

II. The Causation of Fœtor.—Maxillary sinus suppuration is frequently fœtid. More especially is this so in old-standing cases, though fœtor may be present in cases of recent origin. It is not always a simple matter to ascertain the cause of the fœtor, nor can we assume that fœtor is invariably due to the presence of a particular micro-organism; doubtless it is so in certain cases. We are able to adduce this from our cultural investigations owing to the identity of the odour from the pus with that of artificial

cultures of an organism isolated from the pus. In other cases the origin of fœtor is more complex. It may be due to more than one organism: for when two or three organisms have been isolated from the same case it has sometimes happened that each impure culture produced an odour more or less offensive, and any one of them might account for the fœtor. We believe that in some cases the cause of the fœtor is the interaction of several organisms, each of which in pure culture may be non-offensive. Such a condition was found in one case where several aerobic organisms gave no smell in pure culture, but a composite inoculation of them all into a single broth culture gave a plainly fœtid odour after forty-eight hours' aerobic incubation at 37° C. The organism or organisms causing fœtor may in some cases be aerobic and in other cases be strictly anaerobic types. The fœtor caused by anaerobic microbes is particularly objectionable, but even that produced by combinations of aerobic organisms can be very offensive. The fœtor may be positively fæcal, and in such cases it is usual to find organisms of the type of Bac. coli in the pus. The odour may then be due to the production of indol or other similar chemical products of the growth of the organism. No doubt there are many other offensive substances, the chemical nature of which we do not know, produced in sinus suppurations. We think there may be a further element in fœtor which is difficult to estimate, and that is the inefficiency of the aeration of the sinuses, more especially of the antrum. It is conceivable that aerobic organisms, which in pure culture on artificial media and with ample supply of air give no smell, may give rise to odour when growing in the human body under conditions of deprivation in the matter of oxygen. Proof of such a conception is not so easy to obtain, but it would not be wise to overlook this possibility in the case of the antrum. An analogous condition occurred in the laboratory when a bacillus, which in one of the cases was apparently the sole cause of fœtor, had an offensive smell in aerobic culture, but the fœtor was very distinctly worse in the anaerobic cultures of the same organism. The treatment of fœtid sinuses with oxygen was suggested with this fact in view, but the results were not sufficiently definite to encourage its regular use. On the whole, the most fœtid cases were those in which obligate anaerobes were present, but the estimate of the intensity of fœtor will vary somewhat with the individual observer. To some surgeons and patients one fœtor and to others another fœtor may appear more horribly offensive.

We shall consider first the fœtor of uncomplicated antral suppuration. It has been suggested that in antral suppuration fœtor is the result of the presence of anaerobic organisms. Undoubtedly it is so in certain cases, but by no means in all. We found fœtor present in antral cases in which no anaerobes could be recognised as well as in those cases of distinctly anaerobic origin. Fœtor may occur comparatively early in the history of an antral suppuration, because in the eight cases classified as recent—in none of which the discharge had persisted for more than three weeks—two were already fœtid. In one it was due to the Bac. fluorescens putidus, and in the other to a bacillus which could not be identified, but which was numerous in films, absent in aerobic culture, and scanty in anaerobic culture. It was possibly of the nature of Bac. serpens. Of the thirty-five chronic cases twenty-seven were stated to be fœtid. The chief organisms concerned in the production of fœtor in this group were the coliform and mesenteric bacteria and certain putrefactive organisms. They were responsible, either alone or conjointly, for the fœtor in the majority of the cases. In two cases, however, the odour was probably due to the interaction of microbes which in pure culture gave no smell. The organisms responsible for the fœtor in the dental and anaerobic cases were the Bac. gangrenæ pulpæ, Bac. necrodentalis, Bac. perfringens, Bac. ramosus, Bac. serpens, and Bac. thetoïdes. The coliform organisms included Bac. coli, typical and atypical, Bac. pyogenes fœtidus, &c. The mesenteric bacilli were the varieties formerly mentioned, especially fuscus and niger. The putrefactive bacteria included proteus vulgaris, proteus cloacinus, Bac. fluorescens putidus, Bac. proteus fluorescens, Bac. aureus, spirillum rugula and other spirilla. The study of fœtor as revealed in the seventeen complicated antra is particularly helpful. Five cases were mentioned as fœtid, and of these only the two which were undoubtedly of dental origin owed their fœtor to anaerobes. Two cases were due to Bac. coli, and the fifth case to the combination of aerobes. Of the remaining twelve cases five showed aerobic organisms which caused offensive odour in cultures, viz. Bac. coli, Proteus, Bac. pyogenes fœtidus, Bac. mesentericus, and Bac. fluorescens. One other case yielded offensive anaerobes, and was the third of these cases ascribed to a dental origin. The conclusion is forced upon one that fœtor does not appertain only to those cases in which the mouth is the source of infection, but is equally an attribute of nasal infections.

Frontal suppuration may or may not be fœtid. Two of the six cases examined were fœtid. One was an uncomplicated case, and the fœtor was due to Bac. mesentericus fuscus. The other was complicated with antral inflammation of dental origin, and the fœtor was due to the anaerobic bacillus ramosus.

III. The Pathways of Infection.—From what has already been stated, it is clear that we regard infection of the antrum as due both to nasal and buccal infection; it may be well, however, to allocate the cases in this respect. Of the sixty cases uncomplicated and complicated, we regard forty-two as due to nasal and eighteen to dental infection.

Infection of the Antrum.

	Nasal.	Dental or Buccal.	Total.
Uncomplicated cases	28	15	43
Complicated cases	14	3	17
	42	18	60

It will be seen that by far the larger proportion of buccal infections occur in those cases where the antrum is alone involved. The antrum may more easily be infected from the other sinuses than itself infect them. If the antrum commonly infected the other sinuses we would expect less disproportion between the nasal and buccal infections in complicated cases. Further, we might expect to find anaerobic and dental organisms in pus from the other sinuses. This we rarely find to be the case. The pus from the higher sinuses generally yields aerobic organisms. In only one case of frontal suppuration did we find any anaerobic bacilli, and in that case there was reason to believe that the frontal condition was consecutive to abscess of the antrum.

We have tried to show that pus from the antrum may contain the same organisms that are present in decayed or suppurating teeth from the same patient. In four cases in this series we have found in the antral pus, and in teeth extracted at the time of operation, the same organisms. The organisms associated with dental trouble, which in two of the cases we have isolated from antral pus, were the Bac. necrodentalis and the Bac. gangrenæ pulpæ. In a third instance these were accompanied in both the

teeth and the sinus by the anaerobic bacillus ramosus. This is the first time, so far as we are aware, that this bacillus has been isolated from a tooth, though we have found it in other cases of sinus suppuration. It was originally described by Veillon and Zuber in pus from appendicitis, and it was found in the antrum by Stanculeanu and Baup. The nomenclature is rather unfortunate, as the same designation has been given to an entirely different organism which must not be confounded with this strict anaerobe. The name is fairly descriptive of the appearance of the organism in film preparations. We hope to publish a photograph of it along with others in a later paper. The fourth case did not yield the same bacilli in both the tooth and the specimen of pus from the antrum. Mouth organisms, however, were present in the latter, and the same pyogenic streptococcus was obtained both from the tooth and from the antrum.

In some cases, where we examined both a tooth and pus from the antrum, we failed to find evidence of tooth infection, and in the majority of these cases the clinical history pointed rather to a nasal infection.

IV. The Bacteriology of Uncomplicated Antral Suppuration Considered from a Clinical Standpoint.—Our attention has been directed mainly to considering how far the bacteriology of uncomplicated antral suppuration will assist us in determining the best line of treatment to be adopted in any given case. Notwithstanding the fact that suppuration in the maxillary sinus is of fairly frequent occurrence, and that it has for so many years received the attention both of the general surgeon and the specialist, we are still unable to say definitely in every case what operative procedure should be carried out. Two methods of treatment have been recognised in connection with antral suppuration; first, irrigation of the sinus for the purpose of restoring the lining membrane to a healthy condition, which may be termed the conservative method; this is performed either through an opening in the alveolar process, or through the outer wall of the inferior meatus of the nose. The second, which may be called the radical procedure, consists in opening the antrum through the canine fossa and curetting the diseased lining membrane in whole or in part; the operation is completed by establishing a large opening in the naso-antral wall, and closing the wound in the buccal mucous membrane. In this way the sinus is partially obliterated. It has been argued by some that the latter procedure should be adopted in every case in which the discharge from the antrum has persisted

for more than a comparatively short period, so that the mucous membrane of the cavity can be carefully inspected through the large opening in the facial wall, and either left untouched or removed according to the appearances which it may present.

No one with any experience of chronic antral suppuration will deny the uniform success which follows the radical treatment of the sinus; nevertheless, all will admit that a certain proportion of the cases, sometimes, indeed, cases of very considerable chronicity, will readily cure after a short course of lavage through a nasal or even an alveolar opening. The difficult question has always been to decide which of these cases may rightly be selected for the simpler line of treatment. It is with this object in view that we have carefully considered the bacteriology of the discharge. We have always advised against a routine practice of opening through the canine fossa, notwithstanding that it is the only route by which the interior of the antrum can be properly inspected. As a rule, in the latter operation chloroform anæsthesia is necessary. In spite of the advances which have been made in operating under local anæsthesia, we still think that the radical operation upon the antrum is better carried out, alike for patient and surgeon, under a general anæsthetic. Again, the division of the sensory nerves to the gums, upper lip, and teeth causes a good deal of discomfort to the patient for a considerable length of time; and, further, he is probably obliged to absent himself for at least a week from his work. Moreover, in the present state of our knowledge, it is not always possible to determine by inspection whether the lining membrane of the antrum should be left untouched or removed. The simpler operation, on the other hand, now almost invariably practised through the nasal cavity, can be effectively done under local anæsthesia alone, or with the addition of a single administration of chloride of ethyl; the patient does not suffer from the post-operative discomfort which is experienced after the more extensive dissection which the other operation entails, and he can return to his work in one or two days.

It seems reasonable, therefore, and it is undoubtedly more scientific, to attempt to formulate some working basis whereby we may conclude before operation whether conservative treatment will effect a cure or whether the patient should only be offered the more radical procedure. Whether this is possible from the facts before us, we must now proceed to investigate. For the last two or three years we have devoted considerable attention to this question, studying mainly the bacteriology and cytology of the dis-

charge, its duration, and the pathway of infection of the antrum. Clinical experience shows that the duration of the discharge from the sinus prior to treatment cannot be taken by itself as the determining factor in treatment. While it is true that the majority or, indeed, all cases of recent origin readily cure by lavage, the converse cannot be said of cases with a protracted history. Lavage through a nasal opening has been followed by cure in the course of a few weeks in cases which have discharged for five, six, or twelve years or more, while it has failed to do so in others of much shorter duration, such as eight months, one and three years. Some other factor or factors must therefore be considered. For this purpose, however, we have preferred to adopt a clinical classification based upon the duration of the discharge, and have divided the forty-three cases of uncomplicated antral suppuration examined bacteriologically into two main groups, the recent and the chronic.

The Recent Cases.—In this group we have eight cases in which the discharge had persisted from two days to three weeks. The pneumococcus was present in three, being found in pure culture in two of them, while in the third it was in combination with the streptococcus pyogenes and a form of staphylococcus. A streptococcus was present in five, and a staphylococcus in six of the eight cases. In addition to the three main types of organisms, we found the bacillus influenzæ in two, the micrococcus catarrhalis in two, and a diphtheroid bacillus in three. A marked feature in these cases was the absence of the Bac. coli and anaerobic organisms. In one case a bacillus was recognised in large numbers in the pus, but it could not be obtained in pure culture or fully identified. It was a Gram-negative bacillus, which was absent in aerobic cultures, but present with cocci in anaerobic broth culture. It probably accounted for the fœtor noted in the case, but there is no evidence as to its part in the production of the disease. All the cases were of nasal infection, and were treated by nasal lavage, the majority by a few intra-nasal punctures and irrigation, two by the establishment of a permanent opening. All were cured in a very short period of time.

The Chronic Cases.—The second group consists of thirty-four cases classified clinically as chronic, in which the discharge had persisted from five months to twelve years. In the section on bacteriology the total numbered thirty-five, but as one of the patients declined treatment, the case cannot be considered in connection with therapeutic measures. As six of the group were

treated at the outset by the radical operation they may be dismissed, thus leaving a total of twenty-eight for consideration. The following subdivision based upon the duration of the discharge will simplify the study of the chronic cases:—(*a*) Four cases in which the discharge had existed five (two cases), six, and eight months; (*b*) eight cases in which the affection had been complained of for more than one and less than two years; (*c*) five cases with discharge for two years; (*d*) two cases with discharge for three years; (*e*) three discharging for five years; (*f*) one for six years; (*g*) one for eight years; (*h*) one for twelve years; (*i*) three for several years without any definite period of time being stated.

(*a*) A study of the four cases in which the discharge had persisted five, six, and eight months demonstrated that the streptococcus pyogenes was present in two, combined in one with the staphylococcus pyogenes aureus and Bac. coli, in the other with the Bac. necrodentalis and Bac. mesentericus fuscus. The staphylococcus cereus albus occurred along with the Bac. cloacæ in one, and the streptococcus anginosus occurred in the fourth case, combined with the bacillus aureus and a diphtheroid bacillus. The two cases in which the streptococcus pyogenes was absent were cured. Of the two associated with the streptococcus pyogenes one was cured by the nasal operation, the other failed to cure by alveolar lavage.

In three of the four, both bacteriologically and clinically, the infection was nasal; two were treated by the nasal and one by the alveolar opening, and all were cured. The fourth, of eight months' duration, was of dental origin, containing the Bac. necrodentalis; it was treated by lavage through an alveolar opening without success, but was readily cured two years later by a radical operation.

We have thus twelve cases discharging for less than one year, eight of very recent origin—two days to three weeks—and four in which the discharge had existed for a few months, five to eight. Eleven were of nasal infection, ten being treated by the nasal and one by the alveolar route, and all were cured. The twelfth, in which the discharge had persisted for eight months, was of dental origin; it was treated through the alveolus, and was not cured. The streptococcus pyogenes was present in six of the cured cases and also in the unsuccessful case. We must regard the comparatively short duration of the discharge in these cases as an important factor in determining the success of the treatment by lavage.

(*b*) A study of the eight cases in which the discharge had been

present between one and two years demonstrates the presence of the pneumococcus and the streptococcus pyogenes in seven, the two organisms being associated together in six of them. Staphylococci also occurred in five of the same six cases. Dental and anaerobic organisms were found in six of the cases, such as Bac. necrodentalis, Bac. gangrenæ pulpæ, Bac. plexiformis, Bac. perfringens, and Bac. serpens. Six of the cases, therefore, were of dental and two of nasal infection. Three cases which contained the streptococcus pyogenes were cured, two by the nasal and one by the alveolar operation; the remaining four, which contained the same organism, were uncured, one being treated by nasal and three by alveolar lavage. The eighth case in the group contained the pneumococcus and a Gram-negative diplococcus, and was cured by a nasal operation. In summing up we find that the two cases of nasal infection were cured by the nasal operation, while of the six cases of dental infection, two were cured, one by nasal and one by alveolar lavage, the remaining four being uncured, one by nasal and three by alveolar lavage.

(*e*) In five cases in which the discharge had persisted for two years, the pneumococcus was present in two; in one case associated with a staphylococcus, and in the other in pure culture. Both cases were of nasal infection and were cured by nasal lavage. The remaining three contained the streptococcus pyogenes in association with a staphylococcus; in two of them the Bac. coli was also present. One was of dental and two of nasal origin; all were treated by alveolar lavage and were uncured. It is interesting to note in this group that the two cases without the streptococcus pyogenes and treated by the nasal route were cured, while the three with the streptococcus and treated by the alveolar route were uncured. How far was the success or failure in treatment due to the method of procedure adopted, or to the absence or presence of the streptococcus pyogenes?

(*d*, *e*, *f*) Six cases occurred with the discharge persisting for three (two cases), five (three cases), and six (one case) years, and it will simplify the description to study them together. In this group the pneumococcus was not found. The streptococcus pyogenes and a variety of staphylococcus occurred in all the six cases. Anaerobic organisms were present in five. Five of the cases were probably of dental infection, four showing bacteriological evidence of such. Three of the cases containing the streptococcus were cured, all of dental origin, two being treated by nasal and one by alveolar lavage. The remaining three cases containing the strepto-

coccus were uncured, two of dental and one of nasal origin, two being treated by nasal and one by alveolar lavage. In this group there are no discriminating facts, cases with similar organisms, route of infection and method of treatment being alike cured and uncured.

(*g, h, i*) Five cases of eight, twelve, and several years' duration complete the list of chronic uncomplicated antral suppuration. A staphylococcus was found in four cases, combined with the streptococcus pyogenes in two. Diphtheroid bacilli occurred in all, the Bac. coli in two, and the tubercle bacillus in one. In all, the pathway of infection was nasal. The three cases in which there was no streptococcus pyogenes were cured, two by nasal and one by alveolar lavage. The two cases containing the streptococcus pyogenes were uncured by alveolar lavage. We must again ask the question, how far success and failure in treatment were due to the method of procedure or to the presence or absence of the streptococcus pyogenes?

Placing on one side the eight recent cases of nasal infection, cured by nasal irrigation, we must now proceed to summarise the twenty-eight chronic cases in relation to the points dealt with above, namely, the duration of the discharge, the variety of organism, the route of infection and the kind of operation performed. Of the twenty-eight cases, fifteen were cured, thirteen were uncured.

Duration of the Discharge.—In estimating the influence that the duration of the discharge has upon the result of irrigation treatment, we are merely emphasising a well-known clinical fact when we repeat that some cases of long-continued discharge are cured by lavage, while others of much shorter duration fail to be so. Thus if we divide the twenty-eight chronic cases into two groups, one in which the discharge varied from five months' to two years' duration, we find that of seventeen cases nine were cured and eight were uncured, giving 52 per cent. of cures. Whereas in the second group, in which the discharge had persisted from three to twelve years there were eleven cases, of which six were cured and five were uncured, giving 54 per cent. of cures. Therefore a proportionately similar number of the more chronic cases were cured. In chronic cases the duration of the discharge is not a factor that can be taken by itself in deciding whether lavage or radical treatment is to be adopted.

Pathway of Infection.—Of the twenty-eight cases, fifteen were regarded as of nasal, and thirteen of dental infection. Of the

fifteen nasal cases, ten were cured, *i.e.* 66 per cent.; five were uncured. Of the thirteen dental cases, five were cured, *i.e.* 33 per cent.; eight were uncured. In this series much better results were obtained in the nasal than in the dental infections.

Operative Procedure.—Fourteen cases were treated by intra-nasal and fourteen by alveolar lavage; of the former, eleven or 78 per cent. were cured, three were uncured; of the latter, four or 28 per cent. were cured, and ten were uncured. The difference in the result of the two methods is striking. It is now generally admitted that opening the antrum through the alveolus is not a satisfactory procedure, and we have not practised this method during the last two years.

Variety of Organisms.—We have elsewhere indicated that, as the result of observations already published (*Brit. Med. Journ.*, October 1908), we were inclined to the view that when the pus in the discharge from a case of chronic antral suppuration contained the streptococcus pyogenes, the result of treatment by lavage was less satisfactory than when that organism was absent. We have therefore examined the twenty-eight cases in the series in this connection. In eight of them the streptococcus pyogenes was not found; all were cured by lavage. In the remaining twenty cases the streptococcus pyogenes was present associated with other forms of bacteria. Of these, seven were cured and thirteen were uncured. We do not wish to lay too much stress upon the above facts, but they appear to us to be of some significance. Their significance, however, may be to some extent discounted when we consider the operative procedure adopted in the various cases. We have already noted the superiority of intra-nasal irrigation. Of the eight cases without the streptococcus, seven were cured by nasal and one by alveolar lavage. Of the seven cases with the streptococcus which were cured, five were treated by nasal and two by alveolar lavage. Of the thirteen cases with the streptococcus which were uncured, three were treated by nasal and ten by alveolar irrigation. Of the twenty streptococcal cases, therefore, eight were treated by nasal operation, and five, or 62 per cent., were cured; while twelve were treated by alveolar operation and only two, or 16 per cent., were cured. It seems only fair to admit that the alveolar method of procedure may have unfavourably influenced the result in the streptococcal cases.

Cytology of Antral Discharge.—We have sought to throw additional light upon the selection of the line of treatment by a study of the cell elements in the discharge from the affected

cavity, having been stimulated to do so by the work of Dr. William Milligan in connection with suppuration in the middle ear cleft. The work has been carried out by Dr. John M. Darling, and his results have been published in the *Edinburgh Medical Journal*, December 1909. As a number of the cases which he examined belong to the series which form the text of this paper, his conclusions are of special interest. Epithelium, polymorphonuclear pus cells, and lymphocytes are the types of cells recognised. The mucous membrane of the diseased antrum has been examined in a number of cases by Dr. J. S. Fraser. It is obvious from a histological examination of the lining membrane that the inflammatory process shows more advanced changes in one part of the cavity than in another. Consequently the cells found in the discharge cannot give us more than an approximate idea of the degree of the changes which have taken place in the mucosa. Thus, polymorphonuclear cells and columnar epithelium thrown off from one part of the mucous membrane may predominate in the films examined in a case in which at the same time advanced changes have taken place in another part of the mucosa. Presumably when degenerated columnar cells, polymorphonuclear leucocytes in abundance, and lymphocytes in small amount are present in the discharge, the inflammatory process is probably not deep-seated. The presence of large numbers of lymphocytes, on the other hand, indicates the existence of more advanced granulomatous changes. Dr. Fraser, however, was able to demonstrate in the mucosa a marked lymphocytic infiltration in cases in which the cytological examination of the fluid washed out of the antrum showed the cellular elements to consist almost entirely of polymorphs (*Journ. of Laryngology*, London, September 1909).

Dr. Darling concluded from his observations that the presence or absence of relatively large numbers of lymphocytes in the discharge did not depend upon the chronicity of the suppurative disease; in other words, as we have already shown, the duration of the discharge is not itself a factor from which we are to determine that the case is chronic and cannot be successfully treated by lavage. He has further shown, however, that cases in which the discharge shows relatively small numbers of lymphocytes have a better prospect of cure by lavage than those in which an excess of lymphocytes occurs. When the ratio of lymphocytes to polymorphonuclear leucocytes is greater than one to six or eight he considers that the lymphocytes in the fluid are in excess. He further found that, independent of the period of duration of the

discharge, cases in which there was an excess of lymphocytes associated with the streptococcus pyogenes were seldom cured by lavage.

We are therefore justified in concluding, as a result of our bacteriological and cytological observations, associated with our results in the treatment of antral suppuration by lavage, that a knowledge of the organisms and of the kind of cells in the discharge is of undoubted assistance in determining the operative procedure to be adopted. Further, that if lavage is to be carried out, it should be by the intranasal and not by the alveolar opening.

The question naturally arises as to whether an explanation can be given of the tendency of the streptococcal cases to resist treatment by lavage. Two possible explanations have presented themselves to us, namely the pathogenicity of the organism and the possibility that the streptococcus pyogenes finds its way more readily than other organisms into the deeper parts of the mucous membrane, where it comes no longer under the influence of antiseptic irrigation. With regard to the first point, the pathogenicity of the organism, we have already pointed out in the section on bacteriology that it is extremely difficult to say in chronic cases that any one organism is mainly responsible for the pathological condition, because the bacterial contents of the pus vary during the course of the illness, and a condition started by one organism may be maintained by others. Hence the organism of most potent pathogenicity at the time of the examination may not be the same as that which originally started the complaint. Our experiments do not show that the virulence of the streptococcus pyogenes at the time of the examination provides any explanation of the incurability of these cases. The proof of its pathogenicity was sometimes provided by experiment, while in other cases the streptococcus had lost its virulence. Again, we have not sufficient grounds for saying that other pathogenic organisms alone or in combination will explain the incurability of the cases. Thus, the Bac. coli, pathogenic by itself or in combination, was present in six of the cases, two being cured by lavage and four uncured. The pneumococcus was pathogenic in three, of which two were cured and one was uncured; a staphylococcus in three, one being cured and two being uncured. Dental and anaerobic organisms were pathogenic in ten, of which three were cured and seven uncured. We are unable to say also whether the explanation of the failure of lavage is to be found in the condition of the

patient's blood. It is possible that it may be due to a deficiency in the individual's protective substances to deal with the streptococcus or other organisms even with the assistance of lavage. The treatment of a series of cases with a specially prepared streptococcus vaccine should be able to decide this point. Such a method of investigation would in our opinion be more reliable than numerous observations of the opsonic index—another method which naturally suggests itself.

A histological examination of the mucous membrane of the antrum has also been made in several cases by Mr. Henry Wade, with a view to investigating the changes produced in it by the chronic suppurative process, especially in connection with the organisms found in the discharge. The material was obtained partly from cases which had been unsuccessfully treated by irrigation and which afterwards underwent the radical operation, and partly from cases which were at the outset radically treated. Examination of these specimens, however, has not produced proof either of the deeper penetration of the streptococcus pyogenes into the tissue or of greater destructive changes. It was unfortunately impossible to say whether the cocci found in the mucosa belonged to the streptococcal or staphylococcal variety. We have had the opportunity of examining the diseased mucous membrane from one case in which a staphylococcus was present in the discharge. In this case the discharge had persisted for three years; no streptococcus had been found on culture, the chief organisms being the staphylococcus cereus albus, a Gram-negative diplococcus and bacillus flavus. The surface epithelium was much denuded, being entirely absent over considerable areas. Some of the mucous glands were empty and collapsed, while others showed considerable destructive changes. A few of these formed large retention cysts, with structureless contents. Lymphocyte cells adjacent to the denuded epithelial areas were abundant, but there was nowhere any evidence of an abscess in the tissues. This case was treated by the radical operation without any previous course of lavage. Several cases were examined in which both the streptococcus pyogenes and a variety of staphylococcus were associated in the discharge. In two there were a number of microscopic abscesses in the submucous tissue crowded with cocci. In another, in which there were in addition dental organisms, a suppurating retention cyst was found. In another case in which the streptococcus and staphylococci were obtained on culture, microscopic abscesses were also found in the sections;

in none of these, however, could the cocci be defined in the tissues as of the streptococcal form. While these facts are in themselves interesting, we do not think that they furnish sufficient proof of the greater virulence of the streptococcus pyogenes. Although lavage in chronic cases appears to be more successful when this organism is not present and less so when it is, no satisfactory explanation of this clinical fact is derived from our study of the bacteriology of the suppuration, or from the pathological appearances of the lining mucous membrane. It is possible that direct inoculation of the pus might prove the streptococcus to be virulent; in our experiments the isolation of the organism caused delay which might well be and probably was accompanied by loss of virulence.

V. Conclusions.—We advance the following conclusions from the facts disclosed in our investigations:—

1. That sinus suppuration is not caused by any one particular micro-organism.

2. That while bacilli may cause suppuration, we think that pyogenic cocci of various kinds are more often responsible.

3. That four main types of cocci are commonly met with in sinus suppuration, viz. pneumococci, streptococci, staphylococci, and diplococci of the type of micrococcus catarrhalis.

4. That the following groups of bacilli are frequently present in sinus suppuration—(*a*) Bac. coli and its allies; (*b*) putrefactive bacteria such as proteus and its allies; (*c*) dental organisms such as Bac. gangrenæ pulpæ and Bac. necrodentalis; (*d*) an obligate anaerobic group, of which prominent members are Bac. perfringens and Bac. ramosus; (*e*) a diphtheroid group; and (*f*) Bac. influenzæ.

5. That the pus in a considerable number of chronic uncomplicated antral cases contains organisms of dental and buccal habitat, and that in some of these cases it is possible to isolate identical organisms from the pus and from diseased teeth extracted at the time of the operation upon the sinus.

6. That clinical and bacteriological investigations agree in showing that nasal infection of the antrum is more common than dental infection and that probably about one third of the cases of antral suppuration are due to dental infection.

7. That while in bilateral sinus suppuration the pus from the two antra may contain the same bacteria, this is not invariably the case; we have isolated from one antrum a virulent diphtheria bacillus, which was absent from the other.

8. That in recent cases of sinus suppuration the streptococci

were found virulent in 60 per cent., and in the cases of chronic suppuration only 30 per cent. have been proved virulent.

9. That fœtor is the result of the growth of certain organisms, sometimes of those responsible for the suppuration and sometimes of those concerned in the decomposition of the products of inflammation. That both aerobic and anaerobic organisms are capable of causing fœtor.

10. That fœtor may be present in antral suppuration of very recent origin as well as in chronic cases, and that antral cases of nasal infection as well as those of dental infection may be fœtid.

11. That recent cases of maxillary sinus suppuration (duration in this series two days to three weeks) readily cure by lavage.

12. That when lavage is practised whether in recent or chronic cases, it should be carried out through the nasal cavity: the alveolar opening should be abandoned.

13. That a certain proportion of chronic cases of antral suppuration are cured by lavage, but we cannot determine from the history of the case, the duration of the discharge, or the path of infection which cases may be so treated successfully.

14. That some assistance in the choice of lavage may be obtained by a preliminary microscopical examination of the cell elements in the discharge and from a bacteriological investigation of the pus.

15. That the value of cytological examination, however, is minimised by the fact that the inflammatory process causes more advanced changes in one part of the lining mucous membrane of the antrum than in another.

16. That in those cases in which the discharge shows a relatively small number of lymphocytes, the prospect of cure by lavage is greater than when an excess of lymphocytes occurs. (J. M. Darling.)

17. That chronic cases in which no streptococcus pyogenes is found in the pus, more readily respond to lavage than those in which the same organism is present.

18. That when in chronic cases there is an excess of lymphocytes in association with the streptococcus pyogenes, treatment by lavage should not be attempted.

19. That neither inoculation experiments nor histological examination of the lining membrane of the antrum explains the apparently greater resistance of the streptococcus pyogenes to treatment by lavage.

20. That failure in treatment by lavage may possibly be due to

a deficiency in the patient's protective substances to deal with the streptococcus, and that a specially prepared streptococcic vaccine might be appropriately tried in these cases.

21. That we have no evidence that any special combination of organisms is responsible for the failure of treatment by lavage.

DIAGNOSIS AND TREATMENT OF CANCER OF THE STOMACH.[1]

By H. M. W. GRAY, M.B., F.R.C.S.,

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I PROPOSE to consider from a surgical standpoint, first, the *treatment* of cancer of the stomach. I do so because, if the remark recently made by one of our clinical teachers, to the effect that nothing curative can be done for cancer of the stomach, is justified by facts, I feel that our discussion to-night would be useless. I am confident, however, that this is not the case, and hope to convince you that modern surgery can do a great deal for those who suffer from this dread disease, and that, given a better chance, it will be able to bring about lasting benefit, that is, permanent cure, in possibly a majority of patients.

If there be indication of such hope, it is surely very necessary that we should strive for its fulfilment, because of the large and increasing number of our population which annually succumbs to cancer of the stomach. The number of patients dying from this disease in Scotland during the year 1907 was 1025, showing a marked increase since the year 1901, when the number was 838. Before 1901 there were no details published regarding the number of deaths from this cause.

TABLE I.

NUMBER OF DEATHS FROM CANCER OF THE STOMACH IN SCOTLAND FROM 1901 TO 1907.

Year.	Males.	Females.
1901	399	439
1902	374	450
1903	434	449
1904	438	440
1905	412	496
1906	473	543
1907	478	547

[1] A paper, introducing the subject from a surgical point of view, read before the Aberdeen Medico-Chirurgical Society, 13th January 1910.

Number of Deaths from Cancer of the Stomach in England and Wales from 1900 to 1907.

Year.	Males.	Females.
1900	2156	2242
1901	2369	2248
1902	2397	2352
1903	2583	2518
1904	2669	2470
1905	2692	2459
1906	2843	2689
1907	2741	2633

In England the numbers were, in 1900, 4398, in 1907, 5374 (in 1906, 5532). In Aberdeen during 1908 the number was 46. Twenty-two years ago (1888) the number in Aberdeen was 16. It is rather interesting to note that females predominate over males in Scotland, especially in Aberdeen; the reverse occurs in England. In America there were at least 9000 deaths from cancer of the stomach in 1900. The death-rate in that country increased during thirty years from 423 to 632 per million. These figures by no means include all cases of cancer of the stomach, because many cases must be included under such headings as cancer of the liver, gastritis, diseases of the stomach, and so on.

While these totals show such a marked increase, it is also found that cancer of the stomach is increasing more rapidly than cancer of other parts. For example, in America, the relative numbers per 100 cases of cancer showed that in 1880 the breast was affected in 10, the uterus in 14, and the stomach in 20, while in 1900 the breast was affected in 10, the uterus in 16, and the stomach in 31.

There must be some factor or factors to account for this increase, the discovery of which will no doubt help to prevent or cure the disease, but meantime the remedies which are available must be developed as faithfully and thoroughly as possible in order to try to check this alarming increase. Apart from prophylaxis, the only reliable remedy at present is the knife—used scientifically, with thorough knowledge of anatomical details and pathological processes. Every other so-called cancer cure has hitherto been found wanting when put to the test. Treatment by X-rays or radium emanations are effective only for superficial cancers; even the most enthusiastic supporters of such therapeutics do not pretend that the treatment is of any value in the disease under discussion to-night. This being so, the only excuse, and this a most questionable one, for a physician refraining from

handing an early operable case of gastric cancer to the care of a reliable surgeon, is that the physician is influenced by the results of surgical interference of twenty or thirty years ago, and that he has not taken the trouble to know what present-day surgery can do. These old results were certainly very bad and were sufficient justification for the attitude of the physician. All honour is due to the workers who, in spite of such an attitude and in spite of other most unfavourable conditions, have shown that prolongation of life, amelioration of symptoms, and, in quite a fair proportion, complete cure can be obtained. The factors which lead to such success are, first, early diagnosis, then reliable operative technique coupled with knowledge of the anatomical, physiological, and pathological principles involved in the development and spread of the disease.

It may be well at this point to indicate very briefly how experiments and pathological observations (on both living and dead) have defined what is necessary for success in operations for gastric cancer if the case has not progressed too far. The most important question is, in what way does the disease tend to spread? One need not stop to discuss theories as to whether the spread to distal parts occurs by permeative or by embolic processes. The fact that spread occurs along the lymphatics is sufficient. Cuneo showed that no lymph glands are present normally to the left of the middle of the lesser curvature. In this portion, the cardiac end of the stomach, the lymphatic drift is mainly from left to right; in the pyloric portion it is from right to left, that is, converging towards the middle of the lesser curvature. This is most important from the operator's point of view. J. F. Dobson has demonstrated a gland which lies to the left of the cardiac orifice, but this may be disregarded in most cases. In the pyloric portion the lymphatics run for a variable, and often considerable, distance in the stomach wall before entering the gastro-hepatic omentum, to lie along the gastric artery. Cancer begins most frequently in the pyloric end of the stomach, near the lesser curvature, hence this route of dissemination is most important. But when the periphery of the growth approaches the greater curvature one finds infiltrated glands and deposits in the great omentum. The lymphatic drift thence tends towards and behind the duodenum and pylorus, where one finds glands over and often in the sheath of the pancreas, along the gastro-duodenal artery (Fig. 1). It is very striking that cancer of the duodenum is so rare, and that cancer of the pylorus does not

tend to infiltrate or "permeate" into the duodenum. In fact, in a cancer of the pylorus, which completely surrounds that structure, the growth is often extraordinarily sharply defined, and may project into the duodenum like the cervix uteri into the vagina. In the last specimen which I excised, although the pylorus and adjacent part of the stomach were extensively infiltrated, there was very sharp limitation of the disease: the duodenum was entirely free.

In this patient a typical operation was done—one which I prefer to any other in such cases. First the growth, its attachments and any glandular involvement are examined through an

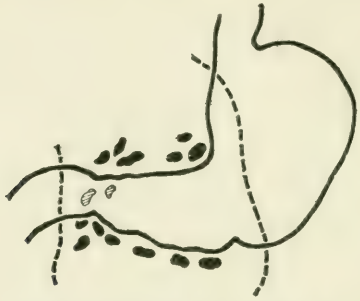


Diagram shewing the amount of Stomach and Duodenum, with Glandular Areas, which is usually removed in Subtotal Gastrectomy.

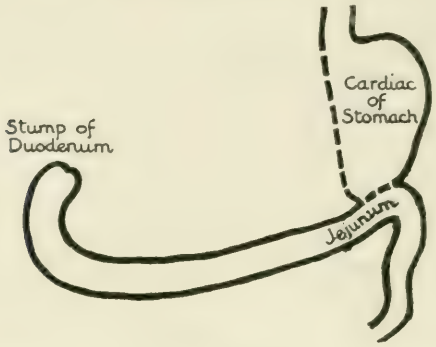
FIG. 1.

incision sufficient to admit the hand. I do not think that a reliable exploration can be made through an incision which admits only two or three fingers. Having decided that the growth is operable, the incision is enlarged so as to give thoroughly efficient access. To permit of easier manipulation of the stomach and to prevent peripheral dissemination by pressure of cancer cells through the lymphatics of the gastro-hepatic omentum, this structure is divided high up, after the gastric artery has been ligatured near the cardiac orifice, beyond the lymph glands. On the left the superior pyloric artery is secured. The peritoneum, lymphatics, and other tissues are stripped downwards with gauze pads. A strip of gauze is packed up under the liver. The duodenum is freed carefully and divided between two pairs of narrow clamps at least an inch from the pylorus. The distal stump of the duodenum is closed by a running suture passed through all the coats of the bowel, the clamp being encircled

loosely by each loop. When the suture is completed the clamp is loosened and withdrawn, the suture being tightened by drawing on both ends, and tied. The stump is then buried by a purse-string suture passed through sero-muscular and submucous coats, and allowed to drop back under the liver. The mucous membrane on the stomach side is cauterised, and the clamp prevented from slipping by a few stitches passed round it through the bowel. When this clamp is drawn forwards the gastro-duodenal artery is rendered prominent, and is then caught and divided between ligatures. The great omentum is now dealt with. The left gastro-epiploic vessels are ligatured doubly, well to the left of any enlarged glands, and divided. This point marks the lower end of the line of division of the stomach. The upper end is close to the œsophagus. The omentum is separated, if necessary, from the meso-colon, great care being taken to leave the middle colic vessels uninjured. The omentum is then divided between mass ligatures far below the enlarged glands along the greater curvature. One should make certain that all the glands around the pylorus and duodenum are included within the line of section. The glands here are stripped up *en masse* with the gastric end of the duodenum. The glands and lymphatics are now stripped upwards off the pancreas. In some cases, as in the one already referred to, the sheath and superficial part of the pancreas are dissected away. The stomach is now clamped and divided along the line decided upon. This allows removal of the diseased portions *en masse*. The gastric stump is then sutured and finally a gastro-enterostomy is performed (Figs. 2 and 3).

This operation goes by the name of Billroth No. 2. It is a fairly typical operation, and illustrates well what must be done if patients are to have a good chance of ultimate recovery. Such an operation should be done even though the cancer mass is small in extent and few or no glands or secondary lymphatic deposits are apparent. One imitates the practice carried out in operations for mammary and other cancers. In justification of this attitude I refer you to Mr. Paterson's statistics. The ultimate results are worst in those cases in which a limited operation was done. The operation is modified according to the part of the stomach affected—simply more or less of the cardiac end is removed. I feel, in cases of cancer affecting the cardiac end chiefly, that it is dangerous to leave the pyloric end, into which the growth extends and spreads most insidiously, even though the cancer may form in its growth an apparently circumscribed mass, most

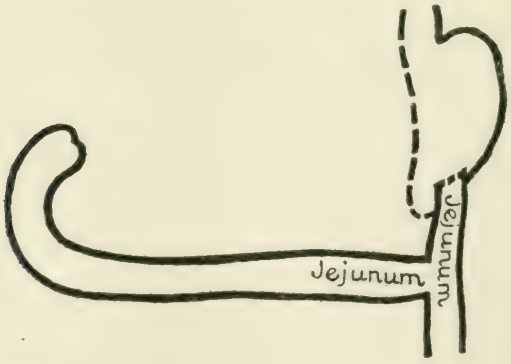
tempting for limited excision. Such a circumscribed large mass is shown here, where only a proximal cardiac fifth of the stomach was left behind, and the operation, done twelve months ago, has



COMPLETION OF SUBTOTAL GASTRECTOMY.

Fig. 2.

been followed by the practically perfect restoration to health of the patient. Although the growth, on naked-eye inspection, was



COMPLETION OF SUBTOTAL GASTRECTOMY.

Fig. 3.

apparently limited to the cardiac end at its lower part, yet Dr. Duncan found, on microscopic examination, that infiltration of the pyloric end had occurred.

Some advise making a preliminary gastro-enterostomy to allow the patient to gain strength before doing the bigger operation.

This is advisable only when the patient is very low in condition. A favourable opportunity may be lost by delay, and, owing to the marked improvement which takes place, patients sometimes refuse further operation altogether. As I shall point out later on, patients stand excision better than gastro-enterostomy.

Cancers of the cardiac opening have so far been amenable only to palliative treatment, and I propose to deal with this later.

One has to inquire now what is the prospect of cure or of real benefit which such operations offer to patients with gastric cancer. Statistics do not give a reliable indication, because no operator thinks himself quite honest if he does not give statistics of a series of cases extending over probably five or ten years, and it is from the last five years that the statistics of modern operations should be taken for our guidance, because technique and after-treatment during this period have been improved so much and have tended to greatly improved results. But although immediate results may be improved, one cannot say anything about remote results, because the period of immunity from recurrence after which, in most cases, cancer may be said to be cured is now put usually at five years instead of three. So-called recurrences have frequently been observed at intervals much longer than this. In any kind of cancer the ease and thoroughness of removal of the lymphatic areas in connection with the part affected indicate the probability of ultimate cure. Young people are most unfavourable subjects, because their lymphatics are abundant. Old people are less so, because, as Dr. C. H. Mayo has pointed out, all the lymphatics are undergoing a slow but sure atrophy, so that the aged have actually as well as relatively fewer lymphatics, and hence have better prospect of cure.

Neglecting these considerations, however, and coming to actual recorded facts, one finds great encouragement. One should take only the statistics of reliable operators. No operator without a highly-developed technique should be entrusted with such cases. Such statistics published during the last decade show an average mortality from the operation of 26·5 per cent. In the last five years this has been reduced to just over 10 per cent. In the practice of the best surgeons it is probably below this. (One must bear in mind that without operation the mortality is 100 per cent., death occurring in a few months.) Compared with this, the mortality twenty years ago was appalling. In a series of 130 cases operated on previous to 1892, collected by Schramm

(Byrant's *Surgery*, 1901), the rate of mortality varied from 50 per cent. in cases in which no adhesions were present, to 97 per cent. where such adhesions were "numerous." Now, with regard to permanent cure, Mr. H. J. Paterson, in 1906, collected 86 cases which recovered from the operation. There were 21 of these alive and well three years, and 12 five years, afterwards. He failed to trace 7 cases. Such records, surely, ought to justify strong recommendations to early operative interference.

TABLE II.

HUNTERIAN LECTURES ON GASTRIC SURGERY, 1906. (H. J. PATERSON.)
RESULTS OF ANALYSIS OF 86 COLLECTED CASES.

	Recovered.	Died since Operation.	Still Living and Well.	
			3 Years after Operation.	5 Years after Operation.
Total Gastrectomy	17 (3 not traced)	5	6	3
Subtotal Gastrectomy. . .	14 (2 not traced)	6	3	3
Partial Gastrectomy. . .	55 (2 not traced)	35	12	6
	86	46	21	12

Seven cases not traced.

I have hitherto considered the operative treatment of cases which present a reasonable prospect of ultimate recovery. There remains a vast number, unfortunately, in which, when they come to the operating table, either nothing at all can be done or merely a palliative operation. How can one decide whether the abdomen should be opened in patients who have developed a tumour? Some men go to the length of saying that where a cancer of the stomach is palpable as a distinct tumour, the case is incurable. This dictum is *probably* true only when the tumour is fixed, and *certainly* true when there are distinct evidences of secondary deposits. Some of the most favourable cases are those with large tumours. I think that when a tumour is movable it is possibly removable, and one should give the patient a chance because one

often gets very gratifying surprises on opening the abdomen, although unfortunately they are less frequent than one would wish. The statistics of Krönlein and Mikulicz reveal the curious fact that patients with gastric cancer, in whom merely an exploratory laparotomy was made, lived longer than those treated by medical means alone. I should not, however, allow this to be an argument in favour of exploration.

Another question that crops up is—if the case is incurable, is a palliative operation justifiable? I think that operation is both justifiable and advisable in certain cases. Of course the patient's wish in the matter must be considered, after, when politic, the possibilities of his case have been explained to him before operation.

I make a palliative operation whenever possible—preferably an excision; and a gastro-enterostomy in cases where excision is not feasible, where the tumour is causing or is likely soon to cause obstruction of the pylorus. After gastro-enterostomy the patient is made comfortable physically if not mentally, and dies an easier and less painful death from the effects of secondary deposits than from those of the primary ailment. In some cases a gastro-enterostomy does not help much, probably owing to the persistence of the bleeding ulcerating mass. In other cases a marvellous change for the better is effected. One can never be absolutely certain of the diagnosis, even when the abdomen is opened, without obtaining a microscopic section of the tumour or of an enlarged gland. This is now well recognised by surgeons. A very striking example occurred in my practice two years ago. On opening the abdomen an apparently typical cancer of the pyloric end of the stomach, adherent to the pancreas, was present. The tumour was palpable beforehand and was fixed. Gastro-enterostomy was done. The patient is alive and healthy, and the tumour has disappeared. Where the cancer affects the body of the stomach and is not likely to cause obstruction, then little good will come of doing gastro-enterostomy. It is especially in such cases that the question of palliative gastrectomy will have to be considered. Many surgeons deliberately make this operation whenever possible. By clearing away all assailable diseased parts the patient's symptoms will be removed until secondary developments assert themselves—often a considerable period. This operation appears to me to be even more justifiable and advisable than removal of an ulcerating incurable cancer of the breast. I repeat that death from secondary deposits is far more bearable than death

from the primary disease. This operation of partial gastrectomy prolongs life, on an average, for fourteen months, while gastro-enterostomy prolongs life similarly for only three or four months. Curiously, also, palliative gastrectomy has a lower mortality than the less extensive operation of gastro-enterostomy for gastric cancer. Of course there is the chance of the gastrectomy being permanently curative. Deaver says very truly with regard to those palliative operations that "not only may the mere addition to the patient's life be of utmost importance from a social, commercial, or financial point of view, but death, when it does come, will attack the sufferer in a less hideous form." Palliative gastrectomy has a less immediate mortality and gives a longer lease of life than gastro-enterostomy, probably because of the fact that in the latter operation the growth is left behind, and continues to secrete "cancer toxins," which have such a deleterious effect on the blood and general nutrition, evidenced by the characteristic anæmia, and loss of weight and strength. It is certain also that the more advanced cases are subjected to gastro-enterostomy.

TABLE III.

B. G. A. Moynihan (*Practitioner*, 1903) quotes results of 264 cases of gastric cancer from Krönlein's Clinic :—

Non-operated cases lived . .	12½ months.
Exploratory laparotomy lived .	13 „
Gastro-enterostomy lived . .	15½ „
Gastrectomy lived . . .	26½ „

There are two other palliative operations which have to be considered—gastrostomy and jejunostomy—by which means the patient is fed through an opening in the alimentary canal below the site of the obstructive and irremovable growth. They both are done to prevent pure starvation, which causes usually extreme anxiety and suffering to victims of this disease. Gastrostomy is performed for inaccessible obstructive growths at the cardiac orifice of the stomach. Enterostomy or jejunostomy is made, only seldom, for growths affecting all or nearly all the stomach. Although such operations may give unspeakable relief for months, I do not think they should be done without fully explaining to the patient what is entailed. Two patients in whom I made a gastrostomy lived in comparative comfort for a year, but I do not care to urge the operation of gastrostomy, and still less that of jejunostomy, except in so far that one must remember that the chief function of the medical man is to preserve and prolong life, especially if the

patient be not seriously affected by the disease apart from its mechanical effects.

I wish now to put before you shortly certain symptoms which, if present, lead one to regard cases of cancer of the stomach, and in fact many other internal cancers, as hopeless from a curative point of view, so far at least as operation is concerned. Their presence does not necessarily exclude palliative operation. These symptoms indicate that secondary infiltration or implantation has occurred to such a degree that radical treatment is impossible. They are—(1) When the supra-clavicular glands have become affected on one or both sides, more usually the left. (2) Typical cancerous enlargement of the liver. (3) The presence of ascites in demonstrable amount. (4) A large and fixed tumour; but this, as evidenced by my own experience, is not always malignant. (5) The presence in the pelvis, in the recto-vesical or Douglas's pouch, of a mass grown from cells which have become detached from the original cancer and have fallen by gravity to the pelvis and become implanted there. This mass can be felt per rectum or per vaginam, and may actually cause rectal obstruction. It is to be distinguished from primary rectal cancer by the absence of ulceration and the mobility of the mucous membrane over it.

I must now, as I have taken up so much of your time, content myself with a few rather dogmatic remarks.

Benign ulcer of the stomach is the great predisposing cause of cancer of the stomach. The longer an ulcer lasts, the more likely will cancer follow. A history of ulcer is obtained, according to different observers, in 50 to 90 per cent. of the cases. (Many physicians assert that this "surgical" percentage greatly exaggerates the frequency with which cancer is preceded by "simple ulcer," yet they quote Boas and other medical authors, who state that cancer *follows* gastric ulcer in 5 per cent. to 9 per cent. of cases. This would amply account for all the cases of cancer of the stomach which are recorded.) Therefore we must be more careful and urgent in our treatment of such ulceration. Simple gastro-enterostomy for ulcer, under present circumstances, does not absolutely prevent the development of cancer, for this has been shown to follow, often at long intervals, in about 3 or 4 per cent. of the operated cases. We must remember that most of these ulcers have existed for many years previous to operation. Although excision of such ulcers is often difficult and dangerous, yet with improved technique it may turn out to be the safer procedure. To my mind, at present, excision of the ulcer plus

gastro-enterostomy makes the ideal operation, but it is by no means always practicable. The short circuit, properly made, prevents recurrence of the gastric condition which produced the ulceration. The treatment of such ulcers, it is evident, becomes the prophylactic treatment of cancer of the stomach. I believe that, in the early stages of gastric ulcer, gastro-enterostomy will cure nearly all cases. In skilled hands, gastro-enterostomy for benign disease is one of the safest operations of the present day. Therefore if an undoubted ulcer resists careful medical treatment for more than a month, or if it shows tendency to recur, I think that operation should be carried out. By earlier surgical interference in these cases than is at present practised, it is probable that the occurrence of post-operative cancerous development will be prevented. I venture to recall to your minds that cancer of the stomach is increasing at an alarming rate in spite of "improved" medical treatment of its greatest predisposing cause—benign ulcer of the stomach.

Supposing you do not agree with this line of procedure, when cancer develops and you diagnose it early enough you are forced to recommend operation. How can this cancerous change be recognised? Moynihan gives some excellent directions which should be borne in mind. He points out that the change may come "in the first life of the ulcer" or "after it has many times healed and as often broken down again." In the first class, the early symptoms are of simple ulcer, but the illness is sustained and "progresses without haste, but without pause," till the more typical persistent symptoms make one realise that the patient is attacked by some serious organic disease. At operation or necropsy an ulcer is found which at one part has become malignant and caused deposits outside the stomach. In the other type, "after a history of repeated attacks, alike in onset, in character, duration, and relief, comes one attack at first so closely resembling all the others that it is with difficulty distinguished as having a special significance, but by degrees revealing a sinister importance and leading on by stages . . . to a condition clearly due to cancer." As Moynihan further points out, there is a third type of gastric cancer in which the patient "stoutly denies . . . any earlier illness or suffering in connection with the stomach." In a condition of good, even robust, health there is a "forcible and abrupt intrusion of symptoms hitherto unknown." Sometimes the illness is ushered in by sudden profuse haemorrhage, and "from that moment there appear the symptoms indicative of a gross lesion of

the stomach." There is a fourth class, which is, however, fortunately very rare, in which symptoms referable to the stomach are apparently entirely absent, and only at a post-mortem examination is the cancerous growth revealed.

One cannot impress too strongly the fact that, to afford any hope from treatment, cancer of the stomach must be diagnosed early. The old "book symptoms" of the disease, which indicate advanced growth, should not be allowed to develop, without the patient having been strenuously recommended to operative interference. If cancer is present the patient very soon finds that *pain*, which is not necessarily severe, is persistent and continuous or returns as soon as the effect of any sedative has passed off. Food is therefore curtailed, and soon only liquids are taken. There is frequently *distaste for meats*, especially fat meats; indeed there is often a repugnance for all sorts of food, which is quite the reverse of what is often seen in simple ulcer. The *patient is uneasy*, and has often an actual dread that cancer has developed. *Anæmia*, which may have been produced by hæmorrhage at first, becomes a prominent and persistent sign. Pallor of the face, compared with the rest of the body, is noticeable, and there may be a faint yellowish tinge, reminding one of pernicious anæmia. The *features* tend to become pinched, and the skin dry and withered, so that one can often almost diagnose the disease when the patient walks into one's consulting-room. *Loss of flesh* and *weakness* are soon very evident, and there is no striking and sustained response to rest in bed and careful dieting as in benign disease. Records of weight taken at regular and short intervals are therefore of great importance, but a recent case evidenced the fact that occasionally, under regulation of diet and simple medicines, such patients may put on weight for a week or two. The patient becomes *languorous* and indifferent often to matters previously of much interest. *Vomiting*, or at least a feeling of nausea, is sooner or later a marked symptom. When the growth affects the pylorus, obstruction occurs comparatively early in the disease. Such cases come most quickly to the operating-table, and are therefore the most favourable from a prognostic point of view.

To my mind, the main object of this discussion to-night is to stir up greater activity in diagnosis and proper treatment of the *early and curable* stages of gastric cancer; in fact, I might go a step further and say, of the pre-cancerous conditions. My present attitude with regard to this subject is the following. On the appearance, in a middle-aged person, of such a symptom-complex

as that just detailed, especially if one finds that treatment is unsatisfactory, one's suspicions should be aroused. Thereafter one should leave nothing undone which it is possible to do in order to prevent the patient slipping over the border-line of curability. I know of no other disease in which the physician and the surgeon can work together with greater benefit. It is not permissible to wait until a *certain* diagnosis can be established before interfering by operation, as in most cases this will be too late for radical cure. I think a month spent in uncertainty is more than ample. One should then make an exploration to make certain. Of course, even though exploratory laparotomy is so safe nowadays, please do not imagine that I think it should be undertaken lightly. There should be weighty, well thought-out reasons for anxiety in the case before it is undertaken, but one must remember that, as Dr. W. J. Mayo has so ably insisted, exploratory incision is the only way that early diagnosis can be established.

I have said nothing about the results of chemical examination of the stomach contents, of blood examination, of the finding of "occult" blood in the faeces, and of X-ray photography after "bismuth" meals. I believe these are of little use for the purpose of early diagnosis. In the majority of cases they form only additional evidence when the advanced state of the disease leaves small ground for doubt. With regard to the gastroscope, which has been advocated recently, I shall not be surprised if its use is accompanied by a greater mortality than that of exploratory laparotomy, and, except possibly in very expert hands, it will not give such reliable information as incision does.

In conclusion, it must be acknowledged that without exploration the diagnosis is an extremely difficult matter, and that the practitioner who undertakes the diagnosis (or want of it) unaided accepts a very great responsibility. Hence I urge more collaboration. That there is great difficulty is evidenced by the fact that, during the thirteen years since I began practice, out of the hundreds of cases which have occurred in Aberdeen alone, to say nothing of those in the districts which are served by our Royal Infirmary, only seven have come under my care, and these during the last four years, in which I could make any attempt at radical excision, and the diagnosis of gastric cancer was made, before being referred to surgical treatment, only in two. The records of the infirmary do not indicate that either of my colleagues has had more than myself.

Perhaps it may interest you to hear that of these seven cases two are dead—one a few days after operation from undiagnosed abscess of the lung, the other from peritonitis, owing to the giving way of the stitches in the stomach. The other five are alive and well, one of them having been operated on nearly three years ago.

NOTE OF A CASE OF TRAUMATIC SUBCORACOID DISLOCATION OF BOTH SHOULDERS.

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J. W., æt. 38, was admitted to the Royal Infirmary on 23rd December 1909, suffering from the results of an accident in a coal-mine.

The history was shortly as follows:—A revolving cylinder studded with sharp picks for cutting into the coal face had got out of order. The patient crawled under the cylinder to find out what was wrong, and at that moment it suddenly started to rotate the reverse way, carrying him with it. The top of the cylinder was only ten inches from the roof. Through this small space the patient was drawn and then thrown to the ground. He was stunned for a moment, but afterwards crawled along to where some other men were working, was taken by them to the surface, and, after being temporarily attended to, was sent to Edinburgh. From the first he noticed that he had lost the use of both arms.

On admission to the Infirmary he was suffering from a certain amount of shock, various lacerated wounds of the right side of the trunk, the right arm, and leg. The most severe laceration was over the right scapula. At first glance one noted that the attitude of both arms was typical of dislocation of the shoulder. This was verified on further examination, and owing to his helpless condition the dislocation of the left shoulder was at once reduced by Kocher's method. Shortly afterwards an anæsthetic was given, the various lacerated wounds thoroughly purified, and the dislocation on the right side reduced. Movements of the left arm were begun at once, but, owing to the wounds on the right side of the body, it was considered advisable to keep the right arm at rest for about a week. All the wounds healed rapidly except one in which some sloughing took place. The patient left hospital three weeks after admission, the right arm still a little stiff, but when seen ten days later the movements of both arms were very satisfactory.

A SIMPLE PERINEAL OPERATION AS USED IN CASES OF PROLAPSUS UTERI AND FOR PERINEAL REPAIR (WITH ILLUSTRATIVE CASES).

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THE operative procedure described in this paper presents nothing essentially new. It is only on a few points of minor detail in the technique that it differs from anything I have already seen done or recorded in literature.

Since Savage, in 1870, pointed out the deficiencies of the pelvic floor accompanying lacerations of the perineum, the technique of perineal operations has been gradually perfected.

The methods of Hegar, Emmet, and Lawson Tait developed the operative measures to such a state of proficiency that we are content to use these operations either in their original form or with some slight modification at the present day. The advance has been made from a simple drawing together of the raw edges of the tear to a lengthening and strengthening of the perineum by continuing the old perineum forwards—either by joining denuded surfaces or by flaps—thereby narrowing the vulvar aperture, all due attention being given to the various fascial and muscular layers.

In most, if not in all of the present-day operations approximation of the borders of the levator ani muscles plays the most important part. Noble of Philadelphia [1] was one of the first to advocate this addition to perineorrhaphy.

The simple perineal operation which I wish to describe is one that I observed used as a routine operation in the clinique of Professor Kelly of Baltimore. The operation was devised by Gerry R. Holden, while Resident Gynecologist in Johns Hopkins Hospital, and described by him as "Perineorrhaphy by uniting the borders of the levator ani muscles." [2]

The technique of the operation as used by me differs slightly from that used in America. It is as follows:—The junction of skin and mucous membrane is picked up on each side with a toothed forceps below the labia minora, and usually at a point just below the remains of the hymen. An incision is made round the curve of the lower part of the vulvar aperture from forceps to forceps (Fig. 1). The posterior wall of the vagina is picked up, and

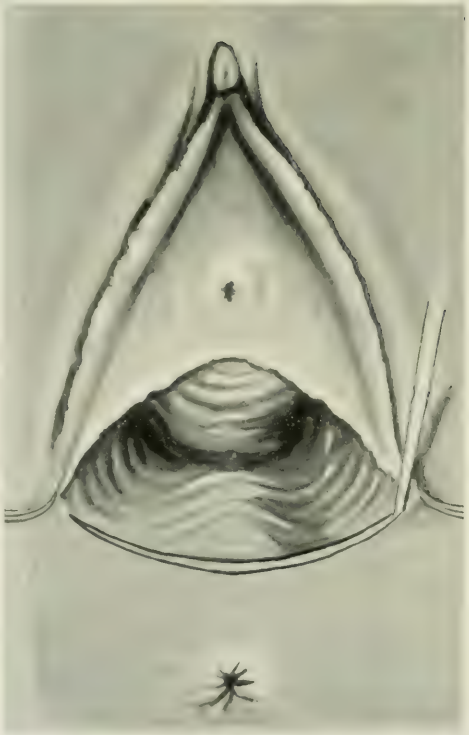

FIG. 1.—Incision.

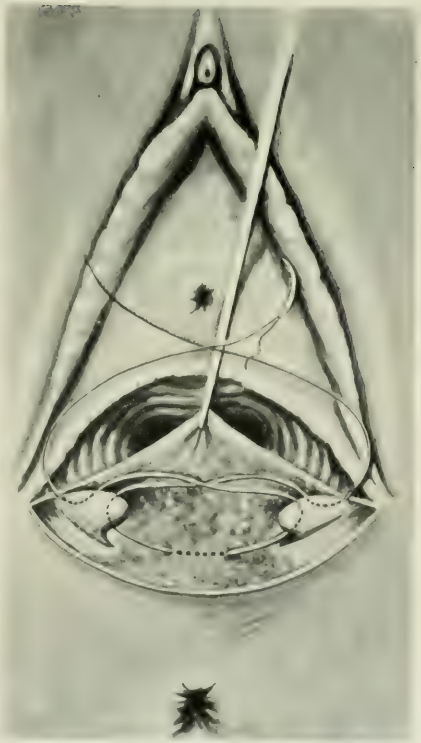

FIG. 2.—Figure-of-eight suture.

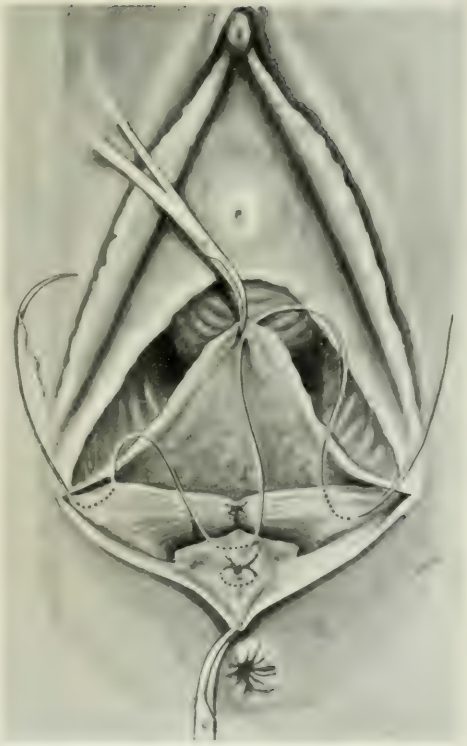

FIG. 3.—Levator ani muscles brought together. Flap sutures in position.

a flap dissected up for about an inch—first by using a knife or scissors and then the index finger. Very little bleeding is caused in lifting up this flap. Into each corner of the raw area just behind the ischio-pubic ramus a small Kocher forceps is pushed through the fascia, opened, and a hold taken of the levator ani muscle. The points of the two Kocher forceps are brought together in the middle line, so bringing the two sides of the levator ani together and narrowing the vulvar outlet. The forceps being held in position with the left hand, a figure-of-eight suture of strong catgut (Fig. 2) is introduced high up in the left corner (patient's left) of the raw area, brought out half inch or so nearer the middle line, reintroduced through the levator ani muscle of the right side near the median line, the needle being carried deep enough to include the deep fascia and any cross strands of levator ani which might be remaining in the old perineum. The same stitch is brought up through the levator ani on the left side near the middle line, and lastly, buried deeply and brought out in the right hand corner of the raw area. Such a suture brings together the levator ani muscles and lifts up the deeper tissues. This stitch is tied. One and sometimes two interrupted stitches of strong catgut are introduced between this first stitch and the lower part of the raw area towards the anus, making a firm perineal body and shutting off any dead space between the edges of the levator ani muscle drawn to the middle line and the sphincter ani.

Should a large rectocele be present the flap is carried higher up to enable one to bring the separated edges of the fascia together with two or three interrupted stitches of strong catgut, the bulging rectum being guarded from injury and pushed down out of the way by the palpating index finger of the left hand.

A stitch of medium catgut unites the under surface of the base of the flap to the fascial covering of the rectum. Another stitch of medium catgut (Fig. 3) is introduced at the left corner of the raw area—which is now much reduced in size—carried through the point of the flap, next through the new perineal body, and then out at the right corner and tied. By these last two stitches a firm covering is given to the rectum, and mucosa is placed to form a new fourchette. A subcuticular stitch of fine catgut introduced in a deep and superficial layer brings the skin surface together.

This operation was performed as part of the surgical treatment in the following five cases of prolapsus uteri.

Case I.—Mrs. H., æt. 27. Married three years. One child two years ago. The patient had never felt well since her labour, which was instrumental. She suffered first from pain in the back and at the sides of the pelvis, from increased frequency of micturition, and then from something coming down which made walking uncomfortable. She had worn a pessary, without relief. On examining her I found she had a large movable uterus, with lacerated eroded cervix just within the vulvar aperture, and a deficient perineum. A rectocele was present. The appendages appeared to be healthy.

The treatment consisted of curettage, repair of the cervix, suspension of the uterus by a modified Alexander-Adams operation. The perineum and rectocele were treated as described.

The patient made an excellent recovery. After getting about for a week or two she complained of some pain in the back. As the uterus was still in good position, I thought the large size of that organ might have something to do with the pain. I introduced a Hodge pessary to give greater support to the pelvic floor. After wearing the instrument for two months she had it removed and is now quite well.

Case II.—Mrs. S., æt. 30. Married ten years. Three children. The first two labours were both difficult and instrumental. The third was easy. When she got up after her second confinement, seven years ago, she felt something coming down in the vagina. She was examined by her doctor, who told her it was her womb that had fallen down. She was treated with pessaries, without relief. She then had an operation, three and a half years ago, when some form of vaginal fixation was carried out. This proved unsuccessful. The condition of prolapse remained as before. Since a short time after her first confinement she had suffered from increased frequency of micturition. She had never had pain in her back.

On examination the perineum was found to be deficient; marked rectocele was present. The cervix presented at the vulva and was split on both sides. The uterus was fairly large; the appendages seemed healthy.

The uterus was curetted, and the cervix repaired. Suspension of the uterus by shortening the round ligaments was carried out. The perineum was extended forwards—a large flap being dissected up to deal with the rectocele.

Since the operation the patient has been very well. During her

convalescence for the first few days she felt a want in the region of the vagina while resting in bed. This feeling passed off. On getting up she again experienced the same feeling of emptiness about the front passage, possibly because of the long-continued existence of the prolapse.

Case III.—Mrs. C., æt. 37. Married thirteen years. Three children, and one miscarriage at two months. The first and second labours were instrumental. There was most difficulty with the second, which was a cross-birth.

About ten years ago she began to suffer from pains in her sides. This was immediately after her second confinement. Then her womb came down. During the earlier months when pregnant with her last child, seven and a half years ago, the falling down of the womb troubled her most. She had been treated with pessaries, but the condition remained much the same for the last six years. Of late years she suffered greatly from frequency of micturition, but even before her marriage she was troubled with an irritable bladder.

Examination showed the perineum to be deficient. The cervix projecting through the vulvar aperture was split on both sides and the posterior lip eroded. A rectocele was present but no cystocele. The uterus was not large. The appendages appeared to be healthy.

The operative treatment consisted of curettage, repair of the cervix, suspension of the uterus by shortening the round ligaments, and repair of the perineum.

During her convalescence she complained of a gnawing dragging pain in the anterior abdominal wall above the region where I had made a transverse incision to expose the external rings, but she is now free from pain, and well.

None of these three cases presented any morbid change in the menstrual history, nor was there any marked cystocele present.

The next two cases did not show such a degree of prolapsus uteri. The operative treatment carried out was for prevention rather than cure.

Case IV.—Mrs. J., æt. 25. Married three years. One miscarriage at four months; one child last August which only lived one and a half days. The labour was instrumental.

She had suffered from pain in the back since her miscarriage about two years ago. After the confinement she had pain in the

back and sides downbearing in character, more or less constant, and worse at her periods. Menstruation was regular but more profuse latterly. She was troubled with increased frequency of micturition after the labour, with occasional attacks of pain on micturating.

The physical examination showed the vulvar outlet to be relaxed, the perineum deficient, the cervix lacerated, the uterus in good position, large and descending some distance into the vagina when the patient strained down. The cervix was readily pulled down to the vulvar aperture. The right ovary was enlarged.

The treatment consisted of curettage, repair of cervix and perineal repair. For some time after the operation she felt very well. She then visited me and complained that she had some pain in her back with one of her periods. This I attributed to the large right ovary, and gave her a course of glycerine plugs. Her pain is now very slight—"nothing to what it used to be," she remarked.

Case V.—Mrs. M'K., æt. 37. Married nine years. One child seven years ago. Two miscarriages, one between the second and third months, and one about one and a half months. The last miscarriage occurred four years ago, when being treated with powders for influenza. The labour was tedious and instrumental.

The patient has suffered from pain in the back and left side since her confinement. This pain had been more or less constant, and always worse for a day or two before her periods, and for the first day of menstruation. The frequency of micturition had been greatly increased since her labour. The patient described the condition as "awful, with no rest day or night."

Examination showed the perineum to be deficient. A slight rectocele was present. The cervix was lacerated on both sides, and the lips eroded. The uterus, which was of normal size and in good position, descended some distance down the vagina when the patient made downward pressure by straining. The appendages were not felt.

The uterus was curetted, the cervix repaired, and the vulvar aperture narrowed by repairing the perineum. She made a good recovery and now feels well.

The following three cases in which perineorrhaphy was performed by denuding the lower part of the posterior vaginal wall, drawing together the edges of the levator ani muscles after deep

dissection, and extending the perineum forwards by means of flaps taken from the labia minora, may serve for comparison :—

Mrs. C., æt. 29. Married six years. Three children.

She complained of pain in the back and increased frequency of micturition. The uterus was large, the cervix large, lacerated and eroded, the perineum deficient, and rectocele present. I had curetted the uterus and repaired the cervix and perineum. After the operation she complained of dispareunia, even although one could insert two fingers with ease into the vagina. Stretching of the parts failed to relieve her, and it was only after making a longitudinal incision for about one inch down the centre of the posterior vaginal wall separating up the mucosa on either side, packing the raw area, and allowing it to granulate, that she was freed from pain during coitus.

Mrs. K., æt. 32, who had suffered from prolapse following on a difficult and instrumental labour, had had her uterus suspended by me by shortening the round ligaments and the perineum repaired after curettage and repair of the cervix, complained for a short time after the operation of bleeding from the parts after coitus. There was no pain on connection. The bleeding was from small lacerations at the sides of the new perineum.

Mrs. S., æt. 35, had her perineum repaired because of an extended laceration which had occurred during her second labour. She had been torn slightly at her first confinement. I attended her in her third confinement, some time after the operation. When I was called to see her during the third stage the presenting head was boring its way through the centre of the perineum. The perineum was greatly thinned out, and was only saved from destruction by making two short lateral incisions which were afterwards stitched.

In both operations a strong perineum is formed, and in both the perineum is extended forwards, narrowing the vaginal outlet. The axis of the outlet is lifted up out of the direction in which the intra-abdominal pressure is transmitted downward in the upper part of the vagina.

In the operation described in this paper a vaginal sphincter of voluntary muscles is incorporated in the perineal body, making a vulvar aperture and perineum which can be easily stretched, and without rigidity.

The cut edges of skin and vaginal mucosa are everywhere correctly approximated. By stitching the point of the flap raised from the posterior vaginal wall into the external wound there is no direct communication between the vagina and the external wound, as occurs when a raw area is made in the posterior vaginal wall. This ought to be an aid in the prevention of sepsis and the consequent breaking down of buried catgut sutures.

By not dissecting the levator ani muscles free from their surrounding fascia the vaginal plexus of veins is not opened into and hæmorrhage during or after the operation lessened.

In present-day treatment of prolapsus, vaginal packs or pessaries are used, or a radical operation is carried out. Packs and pessaries relieve suffering, but are only palliative. The operative measures vary with the severity of the case. In the majority of cases of prolapse the descensus is such, and its persistence so great that a series of operations is necessary to effect a cure. The operations indicated are, as a rule—(*a*) some form of suspension to keep the uterus in position, as shortening of the round ligaments by Alexander-Adams or Gilliam's methods, fixation to the anterior abdominal wall, or high up in the vagina; (*b*) repair or amputation of the cervix, thus getting rid of a wedge which may push lax vaginal walls downwards; (*c*) operations to narrow the vagina and keep back intruding bladder or rectum by tightening the flaccid walls; (*d*) a repair to build up and narrow the vaginal outlet.

The carrying out of all these operations is a long and tedious affair. The operation for cystocele is considered by some authorities as most important, but in the cases recorded there was no marked cystocele.

In a few cases more severe in character where complete procedentia of long duration is present, total hysterectomy may have to be performed. The prolapsus may be so persistent that in some cases the vaginal outlet has had to be closed. Tandler and Halban[3] advocate the exposing of the edges of the levator ani from the vulva to the coccyx, and lifting flaps on each side over the buttocks to expose the outer edges of the levator ani and the inner edges of the gluteus maximus, stitching the opposing edges of muscle together, and thus forming a strong perineum and efficient support to the pelvic floor.

I tender a plea for the early treatment of cases of prolapsus or for its prevention, as illustrated by Cases IV. and V. Such early interference would obviate the need for the major operations I have just enumerated.

The repair of the cervix removes the wedge which, under the driving force of the intra-abdominal pressure, would tend to push one or both vaginal walls towards the vulvar aperture. The vaginal vault is tightened, and sometimes contracted.

The repair of the perineum narrows the vaginal outlet, lifts the outlet up from the axis in which downward pressure is applied, and provides a firm perineal floor. The perineal repair also allows of successful use of a pessary, for unless there is a more or less well-formed outlet to hold it in, a pessary cannot be used satisfactorily.

The operation is comparatively simple. It is one which might be used with advantage by the general practitioner for repair of the perineum a short time after labour, and would give better results than immediate suture of lacerations. It is very quickly performed, about ten minutes being the time required. Few stitches are needed—as a rule four or five are sufficient. Buried sutures are quite satisfactory, but if the suture material or the nursing could not be relied on, I would advocate the use of silk-worm gut sutures to bring together the skin surfaces.

In complete tears extending into the rectum, this method can still be carried out after suturing the bowel and uniting the ends of the sphincter ani.

I have not yet observed how the vulvar aperture and perineum formed by this operation act during labour, but from the apparent elasticity of the parts, I have no doubt there would be little difficulty. There is practically no rigid scar tissue in the new perineum.

REFERENCES.—[1] Noble, *Amer. Gyn. and Obstet. Journ.*, April 1897. [2] Holden, *Amer. Journ. Obstet.*, 1905, vol. lii., No. 4, pp. 497-503. [3] Tandler and Halban, *Monatsschrift für Geburtshülfe und Gynäkologie*, Band xxxi. Heft 1, pp. 77-86, Berlin, January 1910.

CLINICAL RECORDS.

SNAPPING HIP AND SNAPPING FINGER.

By J. M. COTTERILL, *F.R.C.S.*,
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EXAMPLES of these rare deformities have lately been under my care in the Royal Infirmary, and as the etiology in both cases is somewhat similar, they may well be described together.

SNAPPING HIP.

Mrs. M. S., æt. 24, was admitted to my wards in June 1909.

For three years the patient has been troubled with loud cracking of the right hip. A year before the symptoms appeared the patient had a heavy fall down some stairs, but did not notice any inconvenience at the time.

A year later she noticed the snapping jerk when she externally rotated the thigh, and she was not able to walk far without pain. Lately she has felt pain in the hip after lying down for some time.

On examination it was found that, on flexing the thigh on the abdomen, a fibrous band on the outer aspect of the thigh is seen and felt to tighten; and on internally rotating the limb in the flexed position the trochanter suddenly slips under and behind this band with a loud snapping noise, a good deal of pain being felt when this happens.

This "snap" is also elicited by flexion, abduction, and external rotation of the thigh.

Under scopolamine and chloroform a 10-inch vertical incision was made over the great trochanter, and the band exposed. It was found to be a thickened portion of the split fascia lata, the free edge of the band being as thick as one's little finger.

By means of seven kangaroo tendon sutures this band was stitched forwards to the fascia lata well in front of the great trochanter.

The external wound was closed, and a Liston's long splint applied. The splint was kept on for a month, when massage and passive movement were begun. The patient left the hospital a few days later completely cured.

SNAPPING FINGER.

M. S., æt. 56, a miner, got his left hand crushed four years ago at his work.

It seems that a lump of coal fell on the back of his fingers, bending

Fig. 1.—Showing position of diseased fingers in extension—the ring finger most affected.

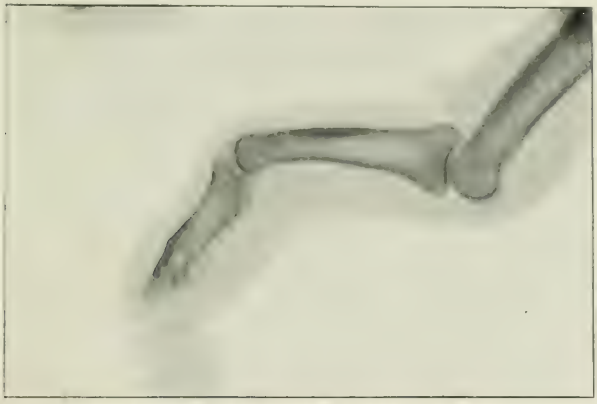

Fig. 2.—Skiagram of ring finger in hyperextension.

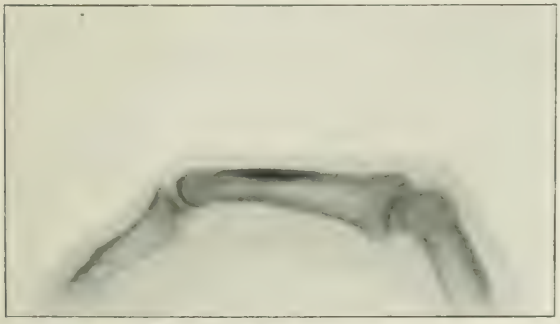

Fig. 3.—Ring finger in flexion.

them forcibly into the position of hyperextension. The middle finger was so badly crushed that it was removed at the time of the accident at a country hospital.

Since the accident the patient has had a painful and disabling condition of the ring and, to a less extent, of the little finger of the damaged hand.

On attempting to extend the finger, as it reaches nearly to the position of full extension, suddenly there is an audible snap and visible jerk of the finger into the hyperextended position denoted in the accompanying photographs.

From this position the patient cannot release the finger without the aid of the other hand, the displacement and its reduction giving rise to very considerable pain. This condition of things which somewhat simulates "trigger finger" in reality differs from it entirely in etiology and symptoms.

In "trigger finger" the difficulty consists in an inability fully to flex or extend the digit without the aid of the other hand. When force is applied in this way, the intended movement of flexion or extension is completed with a snap or jerk. The cause of "trigger finger" is generally believed to be a localised thickening of the tendon or its sheath, generally the former, which prevents the normal gliding of the tendon in its sheath.

In the case under notice the difficulty lay, not in an inability to flex or extend the finger fully, but in a sudden, painful, and uncontrollable hyperextension of the finger.

On careful examination the opinion was formed that the flexor sublimis tendon had been longitudinally split by the force of the accident, and the two halves of the tendon were wrapping round the head of the phalanx and locking the finger in hyperextension.

This was found to be the case on operation. The tendon of the flexor sublimis, instead of parting asunder at the usual place to let through the profundus tendon, was completely split asunder up to the level of the metacarpo-phalangeal joint, and the two halves of the tendon were firmly fixed by adhesions in their position of lateral displacement; the tendon sheath on its anterior aspect was deficient. The halves of the tendon were freed and stitched together towards the mid-line with fine silk. The wound healed by first intention, and full extension of the finger can now be carried out in the normal fashion.

OBITUARY.

JAMES RUTHERFORD, M.D., F.R.C.P., F.R.F.P.S.G.

It was not given to Dr. Rutherford to fulfil his long-expressed wish to die in harness. Signs of serious illness made it advisable for him to resign his position as Physician Superintendent of the Crichton Royal Institution in the winter of 1908. He retired to Mountainhall, a residence close to the scene of his labours, the Crichton Royal Institution, which, it may be truly said, he made great. An old paradox, "He that would rest must work," was specially applicable to Dr. Rutherford. Never happier than when projecting some new scheme, which would benefit the patients, and redound to the credit of the Institution he so much loved, absence of his chief stimuli must have shortened the evening of his life. On the 8th March 1910 he passed away quietly, in a sudden attack of dyspnœa, with his great mental qualities unimpaired, and in the peace "that passeth all understanding."

Dr. Rutherford had reached the allotted span. Born in 1840, a son of the manse, he graduated at Edinburgh University as M.D. in 1863. In the same year he qualified as L.R.C.P.E. After graduation he proceeded to Vienna, and then settled down for a short time in private practice, previous to entering the special branch of medicine which he was ultimately to adorn. From the post of Assistant Medical Officer in the Birmingham Borough Asylum Dr. Rutherford was appointed, in 1870, Medical Superintendent of the Argyll and Bute District Asylum at Lochgilphead. Four years later he became first Medical Superintendent of the Barony Parochial Asylum at Woodilee, Lenzie. Three features were introduced into this new Institution which were characteristic of the bold and uniformly unhesitating policy of Dr. Rutherford —the abolition of airing courts; bright and attractive day-rooms, added to the usual corridor and single-room system of asylums; and an unusually large amount of liberty to patients by the extensive use of parole and open doors. Meantime Dr. Rutherford had, in conjunction with Dr. Lockhart Robertson, translated Greisinger's *Manual of Mental Diseases*, then the standard text-book on the subject. Though of ready pen, Dr. Rutherford did not contribute much to medical literature. His unusually able work became widely known, however, during the time he acted, from 1876 to 1886, as Secretary of the Scottish Division of the Medico-Psychological Association. Numerous foreign visitors were attracted to Lenzie, and he became widely recognised and honoured as Honorary and Corresponding Member and Associate of Continental and American Alienist Societies.

In 1883 the Directors of the Crichton Royal Institution appointed Dr. Rutherford Physician Superintendent. When he accepted this appointment there was an average of 500 patients in the Institution; the average taken in 1895, on a similar basis, was 914. Dr. Rutherford's

management was so successful that patients were attracted from all parts of the kingdom, and the magnificent original endowment did not require to be drawn upon to increase the prosperity of the Institution. The extent of ground surrounding it when Dr. Rutherford was appointed was 150 acres. He raised this amount to over 1000 acres. At the same time he practically remodelled the whole Institution on the most modern and up-to-date principles. In this connection may be mentioned the villas occupied by private patients, those housing the pauper patients of the three southern counties, the new female side of the second house, and, finally, the Crichton Memorial Church—the coping-stone of Dr. Rutherford's desires.

Dr. Rutherford had a commanding presence, and his genial and happy disposition gained for him a host of willing and capable assistants. His remains were followed to Dumfries Churchyard by a large company of mourners, in which many were present who had derived much from his generous and willing help.

Dr. Rutherford leaves a widow and large family. Three sons are in the medical profession, two daughters are married to well-known medical men, one son and two daughters are unmarried.

H. C. M.

ORMOND H. GARLAND, M.D., F.R.C.P.

Of recent years death has been busy amongst the older members of the medical profession in Leith. On 10th March there passed away, at the age of 63, Dr. Garland, the senior practitioner in the town. For a considerable time his health had not been good, but he was at work until the last fortnight, so that we may say he died almost in harness, the end being due to a sudden cerebral seizure.

Ormond Haldane Garland was a native of Leith, the son of a well-known magistrate in the burgh, and graduated as M.B., C.M. in 1868. After acting as house-surgeon in an English provincial hospital, and subsequently as ship-surgeon, Dr. Garland started on his own account in Leith, next door to the late Dr. Struthers, a proximity which was of no little help to a young man commencing to build up a practice. This he very speedily did. Soon after beginning practice he was appointed one of the visiting staff of Leith Hospital, and he served that institution for twenty-one years. During the greater part of that time Leith Hospital undertook the treatment of the infectious cases of the town as well as general medical and surgical cases, so that he had to deal with many serious epidemics, more particularly of typhus.

With the hospital there was a further tie. About 1880, Dr. Garland was appointed Police Surgeon for Leith; and as the hospital mortuary was for years used as the burgh mortuary, much of the medico-legal post-mortem work of the town was carried on there. Many an old Leith

Resident thus has a vivid remembrance of the figure of the late doctor, immaculate in his professional attire, taking notes of an autopsy in which the Resident took no little part.

In 1890, Dr. Garland was appointed Lecturer on Clinical Medicine to the lady students who were at that time being taught at Leith Hospital, a post which he filled till the Royal Infirmary opened its doors to women students and teaching ceased at Leith.

Dr. Garland was admitted F.R.C.P. in 1886, and took his M.D. in 1888.

For many years he acted as visiting medical officer to the John Watt Hospital, and he was also Surgeon to the Leith High Constables. He took a great deal of trouble in the instruction in "first aid" work of the police force, in whose welfare he and Mrs. Garland always took a keen and practical interest.

His loss will be deeply felt in the circle of his many patients and friends. H. G. L.

JOHN WILLIAM TAYLOR, M.D., F.R.C.S.,

Professor of Gynæcology in the University of Birmingham.

The University of Birmingham has sustained a severe loss in the death of its Professor of Gynæcology, Dr. John W. Taylor.

Dr. Taylor was a pupil of the Charing Cross School in London, and took his F.R.C.S.(Eng.) in 1877. At first he carried on general practice in Birmingham, but on his appointment to the Birmingham and Midland Hospital for Women, he specialised in gynæcology. Lawson Tait was then the leading gynæcologist in Birmingham, and certainly one of the most famous and celebrated of British gynæcologists. For some time Dr. Taylor was his assistant, and profited greatly by the teaching of such a brilliant and distinguished operator. Although he did not always see eye to eye with his master, he recognised his supreme ability, and that Tait would have taken one of the very highest places in the world's record had he seen the importance of antisepsis, and not forgotten the Scottish warning to "ca' canny."

In 1899 Dr. Taylor was appointed Professor of Gynæcology in Birmingham University, and filled the position with great distinction and acceptance till his death.

Dr. Taylor's best work was his Ingleby Lectures on "Extra-uterine Gestation," and his book on the subject will remain a classic. He especially worked out the clinical varieties of the advanced extra-peritoneal forms. His papers on "Diseases of the External Genitals" are less known, but they are very valuable, and contain much information on a somewhat neglected subject.

Dr. Taylor was an excellent operator, and performed radical and extensive operations with much success.

He possessed marked artistic and literary abilities, and had he devoted himself to pure literature would have made for himself a distinguished position. This is well seen in his work on *The Coming of the Saints*, which was most favourably reviewed. To one of his devout nature the writing of this fascinating book was a labour of love. This artistic and poetic cast of mind was shown even in his practical papers, and is evident in one on the "Removal by Anterior Colpotomy of a Large Ovarian Tumour Complicating a Case of Labour at Full Time." To most men this would have been a prosaic and engrossing task, but his artistic sense found time to note as he sat down to operate that "dawn was beginning to show." It must have recalled to his well-stored mind Shakespeare's

> "Full many a glorious morning have I seen
> Flatter the mountain tops with sovereign eye,"

and given him hope and inspiration in his novel task.

This power of his comes out even in a more marked degree in his address at the opening of one of the sessions (1901) of the Charing Cross School. Such addresses usually coruscate with optimism. Taylor, whose subject was "Life and Character," struck a truer note of warning and caution to his audience, and quoted with fine effect Christina Rossetti's beautiful lines—

> "Does the road wind uphill all the way?
> Yes, to the very end."

For him in his later years the road was steep and the toiler faint, but he fared on hopefully and at last reached the goal, with the delectable land clear before his steady and placid eye. His life was a gentle beneficent one, and at its end he could say with Lander—

> "I strove with none, for none was worth my strife;
> Nature I loved, and next to Nature, Art;
> I warmed both hands before the fire of life,
> It sinks, and I am ready to depart."

To his widow and family his loss is irreparable; yet they have the best of all consolations—the memory of an unsullied and beautiful life. No one gained his friendship without rejoicing in it. A talk with him was a liberal education in Art, Science, and Ethics. For each of his many friends the feeling is summed up in the old lines, written for all time—

> "Multis ille bonis flebilis occidit,
> Nulli flebilior quam mihi!"

D. B. H.

JOHN BURNS, F.R.F.P.S.G., J.P.

Dr. John Burns of Bridgeton, whose name has been a household word in the east end of Glasgow for over fifty years, died at his residence in Fitzroy Place on the 24th of March.

He was born in September 1815, and was thus well into his ninety-fifth year. For some years he had been the Father of the Faculty.

A native of Perth, where his father kept a school, he came to Glasgow early in life, with the intention of entering the Church, but after studying in the Faculty of Arts at the University for a time with this end in view, he relinquished the idea and turned his attention to medicine.

His medical studies were prosecuted in Anderson's College, and in the Portland Street School, where the distinguished Dr. Knox conducted classes in anatomy.

He obtained his licence from the Royal Faculty of Physicians and Surgeons of Glasgow in 1846; in 1851 he became a Fellow, and in later life he was elected to the office of Visitor to the Faculty.

He began practice in the Bridgeton district, where for many years he was Parochial Medical Officer.

He was deeply in earnest in all he did, and was soon much in request, by both the employers of labour in that busy centre, and by the numerous employees of the various factories.

He had a bias towards surgery, and in his early years he made a reputation for boldness and success in his operative work, which would now be impossible of attainment by even the most enterprising general practitioner.

He led a strenuous and useful life, and having amassed a reasonable fortune, was on the eve of withdrawing from the active practice of his profession, when, on the failure, in 1878, of the City of Glasgow Bank, in which he was a small shareholder, he surrendered all his possessions and started life, practically afresh, at the age of sixty-four.

He continued at his work to within two years of his death, and although he was long past the allotted span, his advice and counsel were eagerly sought by a large number of patients, of all classes, from Glasgow and the West of Scotland.

On the occasion of his jubilee as a medical practitioner, in 1896, he was entertained to dinner by his friends in Glasgow and the West of Scotland, and was presented with a brougham; and shortly thereafter he was made the recipient of a further mark of their regard and esteem, in the form of a portrait, painted by Mr. John P. Downie, R.S.A. The portrait was handed over to the keeping of the Corporation of the City of Glasgow, and it now hangs in the People's Palace, in the Green, close by John Street, Bridgeton, the centre of Dr. Burns's life's labours.

Ten years later, in 1906, he was again entertained to dinner by a number of his medical friends and other well-known citizens of Glasgow, when, in spite of his 91 years, he gave, in reply to the toast of his health, many interesting and well-told reminiscences of his experiences in the practice of medicine in the early Victorian era. W. D.

RECENT LITERATURE.

CRITICAL SUMMARIES AND ABSTRACTS.

MEDICINE.

By JOHN D. COMRIE, M.A., B.Sc., M.B., F.R.C.P.,
Lecturer on History of Medicine, University of Edinburgh,
Assistant Pathologist, Royal Infirmary.

Diagnosis of Gastric Carcinoma.

In view of the success with which modern surgery is handling this disease, the earliest possible diagnosis becomes of ever-increasing importance. Kast[1] believes that the general practitioner is far too loth in suspecting the presence of cancer in the stomach, so that many cases which are at first of a curable nature become inoperable by the time a diagnosis is definitely formed. In a patient who develops stomach symptoms between 40 and 70, this disease should always be kept in mind, and the points to which he believes special attention ought to be directed are—active peristalsis, the stomach tending in the early stages of the disease to empty itself more speedily than normal, though atony appears later; the microscopic findings of tissue fragments in washings from the fasting stomach; the gradual disappearance of hydrochloric acid from the gastric juice; the appearance of lactic acid, with lactic acid bacilli; the Salomon test; the chemical proof of the presence of occult blood in the stools; and, finally, if these are not sufficient to establish a diagnosis, the progressively downward tendency in a suspected case observed over four weeks. Other observers have recommended also the examination by radioscopy of the shadow produced by a meal containing a large dose of bismuth, which tends specially to adhere upon the uneven surface of the cancer and produce a deeper shadow in one spot.

Salomon's test is described and discussed by Mathieu.[2] It depends upon the fact that ulcerated mucous surfaces—in this case the surface of the carcinoma—secrete quantities of mucin, serum-albumin, and nucleo-protein, which can be detected. The stomach of the suspected case is well washed out in the evening, and in the morning the fluid which the organ contains is drawn off and tested with the ordinary Esbach albuminimeter. Mathieu's conclusions are that the occurrence of a large flocculent precipitate of albumin, when the picric acid solution is added, is an almost certain sign of cancer, although the absence of any such precipitate does not exclude the disease in an early, non-ulcerated state.

Examination of the stools for blood is believed by Cade[3] to be the most important of all diagnostic and especially of chemical investigations for stomach cancer. It has proved positive in almost all the cases examined by him. The blood is found in nearly every stool passed, with occasional periods of short intermission. Accordingly, if the stools in a suspected case be regularly examined for blood with negative result, the presumption against carcinoma is exceedingly strong. The standard guaiac test is recommended by Dreyer[4] to be performed in a special fashion. He saturates a piece of white blotting-paper with ozonised turpentine, pours upon it an ethereal solution of guaiac resin, and dips it into the fluid to be examined. Ohly[5] gives a detailed description of the guaiac and aloin tests which he combines in this examination. Csépai[6] uses the spectroscopic method after reducing the blood in the fæces by means of pyridin and ammonium sulphate—a procedure by which, he says, the test is rendered ten times as delicate as the ordinary spectroscopic examination.

Lactic acid bacilli, known also as Oppler-Boas bacilli, have long been recognised as bearing a special relation to carcinoma of the stomach, and are characterised by their long, thread-like form, and by the fact that they contain granules which stain with iodine. They have recently been subjected to exhaustive examination by Fricker,[7] who finds that they occur in subacid states of the stomach, but also elsewhere in the intestinal tract; they do not proliferate in the stomach, however, unless there is retention of the subacid contents in consequence of atony or dilatation. This combination of defects is, in the majority of cases, due to carcinoma, so that their presence in large numbers may still be accepted, like the occurrence of lactic acid, as a valuable sign of this disease. The examination, moreover, is an easy one, for which the smallest quantity of material adhering to the stomach-tube or of vomited matter suffices.

Absence of hydrochloric acid offers a question of great complexity; for though this test is a most valuable one, it is very fallible unless interpreted with discretion and with reference to the circumstances of the individual case. There was a tendency some years ago to attribute to the absence of HCl an almost pathognomonic value in the diagnosis of gastric cancer, but many other states are known to cause it. The writer of this summary has found that patients reduced to a state of low vitality by privation and underfeeding, and admitted to hospital suffering from various conditions, but especially from diseases of the nervous system, like tabes, very commonly show at first an absence of HCl, which, however, soon reappears in the gastric juice under improved conditions of rest and feeding. Eisenhardt[8] has made a special investigation of the stomach functions of habitual drunkards, and while the power of the stomach to empty itself normally was retained in most cases, it was very common to find the gastritis from

which the patients suffered characterised either by complete absence or by great diminution of HCl. Further, many cases are found, quite apart from alcoholic abuse, which present no recognisable gastric juice. Faber[9] has investigated 112 cases of this achylia gastrica, and finds most of them associated with anæmia, as a rule of an unprogressive, secondary type, though in about 10 per cent. of cases the anæmia was of a typical pernicious type. Stockton[10] also has dealt with a series of 132 such cases; in some he observed a slow recovery of the power to secrete a normal gastric juice, and about 16 per cent. of his cases gave the blood-characters of pernicious anæmia; a curious feature which he found in many of these cases was that the administration of hydrochloric acid was very badly borne. As one would naturally expect, the mucous membrane of a stomach in which the functions depart so far from what is usual shows considerable histological change. Faber and Lange,[11] having made extensive microscopic investigations, find that these changes may vary from destruction of the glandular structure in patches to a complete atrophy of the entire mucous membrane. An answer to the interesting question of how far such a condition predisposes to the development of gastric cancer has been the task which Jüngerich[12] set himself. It is clear that if most of these cases proceed to either of the serious states found in pernicious anæmia or gastric cancer, then the absence of HCl regains its former position as a sign of the gravest import. But, setting aside cases of anæmia, Jüngerich found among 50 cases of stomach carcinoma that these had developed from a state of complete health, so far as the stomach was concerned, with no previous defect of gastric secretion; on the other hand, 32 persons of over 40 years who came under his observation with a very long history of suffering from the symptoms consequent upon an absence of the gastric juice showed no sign of developing a malignant tumour. One must, therefore, not assume that these cases in which HCl is absent pass on later to carcinoma; and, when this disease is suspected, the absence of HCl must simply be weighed along with the other physical signs, regard being had to the possibility of its former absence.

A simple method of gauging quite roughly, but without any discomfort to the patient, the activity of his gastric juice, has been devised by Meunier,[13] as a modification of Sahli's desmoid test with a capsule containing methylene-blue. Drops of ether are enclosed in a minute rubber bag, the mouth of which is secured by a thread of raw catgut of definite thickness, and when this is digested in the stomach the ether escapes, is quickly vaporised, and causes an eructation unmistakably recognised by the patient. The value of this method has been tested by Marenduzzo,[14] who finds that it gives information only of a very rough nature, for even in healthy persons the ether-eructation appears within such wide limits as from 40 minutes to 3½ hours, while

in the same person at different meals considerable variations in the time required for digestion of the catgut string are found.

Röntgen-ray examination of the stomach after administration of bismuth continues to add to our knowledge with regard to carcinoma and other affections. The observation of a specially dark patch in ulcerated carcinoma has been already mentioned. Schlesinger and Holst[15] have made observations as to the position of the pylorus in relation to the rest of the stomach, and find that, under normal conditions, it is not, as often supposed, the lowest point, which is situated, in health, a little distance to the left. Hürter[16] gives a brief account of the history of stomach examination by this means and an extended description of his own recent investigations on the subject. He mentions, *à propos* of the large doses (30 to 40 grms.) of bismuth subnitrate commonly administered for the purpose of producing a shadow, three cases of fatal poisoning and several less serious instances of its evil effects. This fatal result is generally attributed to the action of the nitrate or nitrite evolved from the drug, and, if so, can be avoided by using, as most workers on this subject now make a practice of doing, the carbonate of bismuth instead of its subnitrate. Magnetic oxide of iron in powder has been recommended, but, in several of the cases where Hürter has used this, disagreeable symptoms of gastric irritation have been set up. Hürter's practice, accordingly, is to give a cachet of 1 to 2 grms. bismuth carbonate, to watch its descent with the screen, and follow this up by 15 grms. of bismuth stirred up in 50 c.c. of water. This serves to show in a general way the position of the stomach, presence of peristalsis, &c., and more definite information can then be obtained as to its size by the administration of Rieder's test meal, consisting of 500 grms. of potato purée, milk, &c., containing 30 to 40 grms. of bismuth carbonate. If there is any likelihood that the bismuth will be retained in the intestine for a lengthy period by stenosis, &c., or if there is any ulceration of the bowel, this writer removes the meal by lavage after the Röntgen-ray examination has been made, so as to prevent any chance of disintegration and absorption of the bismuth salt.

Diabetes Insipidus.

Diabetes insipidus is a condition which is capable of causing great distress and discomfort to a patient, even if he does not show the same downward tendency as a person suffering from the glucogenic type of the disease. Recent investigation of the disease has shown the importance of recognising a type dependent upon nervous system affections, organic or otherwise, a type dependent upon syphilis, and a so-called idiopathic type. In the last-named set of cases, Tallquist, Bräuning,[17] and others have directed attention to the "concentration

power" of the kidney, and the great amount of alleviation that may be got by using a salt-free diet when this power is found to be retained. The healthy kidney possesses the power, when an excess of some soluble substance is present in the blood, to excrete this specially, and without extracting a great excess of water to produce a urine of high specific gravity. In diabetes insipidus this power is more or less lost, and when a special amount of solid has to be excreted this is effected only by dehydrating the tissues generally, while the urine, increasing in amount, remains of the same low specific gravity, and still greater thirst is induced. Bräuning found that in eight out of eighteen cases great benefit was obtained from a salt-free diet. As to the method of procedure in any given case, Minkowski [18] recommends giving at first an excess of salt without an increase of water, and observing whether the effect, on the one hand, is to augment the quantity of urine or, on the other, to increase the specific gravity and chloride content. If the increase of specific gravity and of chloride present in a sample shows that the "concentration power" is still retained, one may attempt to treat the case by reducing the amount of water drunk. If, on the other hand, the quantity of urine is increased by the added salt ingested, then one should prescribe a restriction in the salt and nitrogenous articles of the diet.

The Hypophyseal Adiposo-Genital Syndrome.

Two papers by Launois and Cleret [19] have for their object to show how lesions of the pituitary gland, associated with developmental, pathological, or functional troubles of the genital apparatus, produce in the connective tissues an enormous deposit of fat. The authors, admitting our complete ignorance of the physiological relations that may subsist between the genital organs and the hypophysis cerebri, content themselves meantime with describing briefly the features presented by twelve cases of disease showing the three general characters mentioned above, and give to such cases the general name of this syndrome. The cases affected comprised six women, two girls, three men, and a boy, and presented features suggestive of acromegaly on the one hand and features suggestive of Dercum's disease on the other. Twenty figures are given in the text, which help to convey a clear impression of the syndrome. As regards the fat deposit, it is general, both on the surface and in the body cavities, and enormous in amount, so that one woman weighed 155 kilos. The signs of sexual dystrophy varied, but were, generally speaking, those of arrested development, while the pituitary body was found to be much enlarged, or the seat of tumour formation. Microscopic examination of the genital and pituitary glands is, in most of the cases, still wanting.

References.

[1] *American Medicine*, December 1908. [2] V. *Brit. Med. Journ.*, 5th February 1910. [3] *Archiv. des Mal. de l'appar. digestif.*, 7th July 1909. [4] *Münch. med. Wochenschr.*, 27, 1909. [5] *Deutsche med. Wochenschr.*, 35, 1909. [6] *Deutsche med. Wochenschr.*, 27, 1909. [7] *Archiv. f. Verdauungskr.*, Bd. xiv., H. 5, 1908. [8] *Zeitschr. f. diät. u. physik. Therapie.*, December 1909. [9] *Mediz. Klinik*, 35, 1909. [10] *Amer. Journ. of the Med. Sci.*, August 1909. [11] *Zeitschr. f. klin. Med.*, Bd. lxvi., p. 53. [12] *Med. Klinik*, 43, 1909. [13] *Presse Médicale*, 18th January 1908. [14] V. *Archiv. f. Verdauungskr.*, Bd. xvi., H. 1, 1910. [15] *Deutsche med. Wochenschr.*, 35, 1909. [16] *Archiv. f. Verdauungskr.*, Bd. xvi., H. 1, 1910. [17] *Würzburger Abhandl.*, Bd. x., H. 2, 1909. [18] *Ther. der. Gegenwart*, January 1910. [19] *Gazette des Hopitaux*, 13th January 1910.

SURGERY.

Remarks on Traumatic Coxa Vara and its Treatment.

Royal Whitman (*Zentralbl. f. Chir.*, No. 11, 1910), in discussing coxa vara, refers to the designation by this term of a number of conditions differing in their etiology, and enumerates five groups of cases which are so classed. He holds that cases due to fracture of the neck of the femur or to separation of the epiphysis of the head in the non-rachitic should not be designated coxa vara, for it is necessary to distinguish clearly between deformities due to rickets and the results of trauma in selecting appropriate methods of treatment.

Whitman's work has chiefly been directed to the study and treatment of fracture of the femoral neck in children and the resulting deformity. Observation of more than fifty cases has convinced him that the femur commonly breaks through the neck in children as well as at the epiphysial line of the head. The two groups of cases may be distinguished by the facts that when the neck breaks the symptoms are most marked at the time of the accident, and gradually improve, leaving behind only the disturbance due to the altered contour of the neck. When, on the other hand, the lesion is at the epiphysial line, the original trauma is often slight and the initial symptoms little marked. The joint cavity is, however, necessarily involved, and the functional disturbances often gradually increase, so that cases are often regarded as instances of tuberculous disease.

When the neck is broken the treatment is relatively easy, and consists in applying traction, abduction, and slight internal rotation with fixation in that position till healing takes place. Old cases require a previous linear or wedge-shaped sub-trochanteric osteotomy.

When there is epiphysial separation, it is necessary to employ forcible movements to disengage the fragments thoroughly before cor-

rection and accurate reposition by abduction, &c., can be carried out, while in many cases the fragments are so firmly impacted in faulty position that it is necessary to open the joint and use the chisel to separate the fragments in order to effect accurate correction and apposition. As the result of his experience, Whitman is not such an enthusiastic advocate of bloodless methods as Lorenz and Sprengel. Outline sketches accompany the paper to illustrate points in the treatment. J. W. STRUTHERS.

Congenital Dislocation of the Hip.

In an article in *Le Progrès Médicale* of 29th January 1910, some interesting points regarding the etiology and pathology of this condition are brought forward by Le Damany and J. Saiget. After mentioning that the condition is rarely noted before the child begins to walk, they describe the symptoms and discuss the differential diagnosis. They suggest that the maldevelopment of the acetabulum and head of the femur are not the cause but the result of the condition, and that the essential element in the production of the dislocation is the fact that the articular surfaces of the head of the femur and the acetabulum, instead of being normally opposed to one another, are in abnormal relationship, this being chiefly due to the rotation of the femur, so that the head is directed forwards instead of inwards towards the articular surface of the acetabulum. They show that not only is the condition far more commonly met with in the female sex than in the male, but also that it is practically confined to the white race, namely, to those most highly developed.

Discussing the supposed causes, they put all aside except that which may be described as the congenital malformation theory; they admit that the development of the anatomical structures involved is imperfect, but they maintain that they are only secondary. They point out that during the earlier months of fœtal life the cavity of the acetabulum is more marked than in the later months. During the latter half of intra-uterine life the flexion of the femur on the abdomen is excessive in the most highly developed, *i.e.* in the white race, and especially so in the female sex; further, that this excessive flexion causes a rotation outwards of the femur in its long axis, with the result that the articular surfaces are altered in their relation to each other.

To put the matter shortly, their theory may be stated thus:—If it were not for the high state of development of the white race, especially of the female sex, and the excessive flexion of the femur on the abdomen in the latter half of intra-uterine life, the maldevelopment of the parts which go to form the hip-joint would not occur.

GEORGE CHIENE.

The Surgical Treatment of Empyema.

C. E. Tennant employs a Klapp's suction-bell to facilitate the early expansion of the lung after operation for empyema (*Annals of Surgery*, January 1910). With other suction or valvular devices, the drainage tube is left too long in the pleural cavity, and so favours the production of a persistent sinus.

Through an incision "a little below the middle of the largest area of flatness, regardless of other landmarks," part of a rib is resected subperiosteally, and all compartments are opened up by the finger. For septa out of reach, a uterine sound may be swept round between the two layers of the pleura. Each pocket is drained by a large fenestrated tube, which is placed well down in its depths. The tubes are left *in situ* for five days, during which each has to be kept clear of coagula by means of a strong suction syringe.

On the fifth or sixth day the tubes are removed, and the expansion of the lung is actively encouraged. The suction-bell is applied over the opening and exhausted by a pump or bulb. It is kept on for half an hour or more, while the patient makes violent respiratory efforts. Or it may be strapped over the opening and a fairly constant negative pressure maintained by repeated manipulations of the pump. Tennant found that in seventeen days at the most the wound was closed. Occasionally it closed too soon, and a fresh collection formed. This was tapped by a blunt probe curved to the contour of the chest wall, and drained by the aid of the bell.

The method of treatment here described does not produce expansion of the lung when there is a direct communication with a bronchus. This complication, however, often disappears quickly after the hydrostatic pressure of the fluid is removed by operation.

Though he designates the suction-bell the "Bier hyperæmic cup," Tennant does not venture to say how far its action is physical by decreasing the external pressure, and how far physiological by producing a passive hyperæmia.

[If the patient is able to lie on the sound side, there seems no reason why the suction-bell should not be applied over the drainage tubes from the beginning, provided they do not jut far into the pleural cavity, and are frequently inspected for fear of blockage.]

James Lochhead.

Subcutaneous Traumatisms of the Kidneys.

When the kidney is subjected to a severe injury its true capsule, according to Noever (*Ann. de la Soc. Belge de Chir.*, January 1910), is almost invariably ruptured, and an extravasation of blood, and possibly of urine, takes place into the fatty capsule, which, as a rule,

remains intact. Usually the hæmorrhage soon ceases, but if a large vessel be torn, an enormous hæmatoma may form. The fate of the resultant perirenal hæmatoma is very variable. In many cases it becomes gradually organised, and spontaneous cure results; in others it becomes infected and a perirenal abscess follows; whilst in a considerable number of cases it persists, and, acting as a foreign body, excites an inflammatory reaction in the surrounding tissues, with the formation of adhesions to the diaphragm, peritoneum, and colon. If the extravasation following the injury be chiefly urinary, a traumatic pseudocyst forms, and this may rupture at a later date into the pelvis of the kidney, or if the ureter be occluded, may persist, as occurred in a case recorded by Noever.

Whatever be the nature of the effusion, early operation should be undertaken, and the operative measures should be as conservative as is possible, the ruptures in the kidney being sutured; and even when a portion of kidney is torn off, the hæmorrhage may be arrested by sutures traversing the parenchyma. In operations carried out some weeks after the injury, anything more radical than simple evacuation of the partly organised blood-clot is inadvisable, owing to the extensive and dense adhesions which are always present in such cases.

D. P. D. Wilkie.

The Choice of Incision for the Removal of Large Renal Tumours.

In the vast majority of cases of nephrectomy an extra-peritoneal operation is to be preferred to one in which the peritoneal cavity is opened. The incision adopted for the removal of large tumours of the kidney must fulfil two requirements; firstly, it must give free exposure of the growth, and secondly, it must give direct and easy access to the renal pedicle which is frequently very short and deeply situated. The best incision to employ in such cases, according to de Beule (*Ann. de la Soc. Belge de Chir.*, January 1910), is a rectangular one, composed of an anterior vertical incision along the outer border of the rectus muscle, and from the upper end of this a horizontal incision running transversely outwards to the loin. A triangular flap is thus turned downwards and outwards, the peritoneum being carefully detached inwards from its deep surface. The peritoneum with the colon is then separated from the anterior surface of the kidney and the renal pedicle freely exposed. The writer considers that the access gained by this method is much superior to that obtained by König's rectangular incision where the vertical limb is in the loin, and maintains that the H-shaped incision introduced by Bardenheuer is seldom if ever required.

D. P. D. Wilkie.

The Course and Fate of Cases of Renal Tuberculosis not Submitted to Operation.

In order accurately to gauge the value of the operation of nephrectomy in cases of renal tuberculosis, it is essential to follow up the progress and to learn the fate of cases not subjected to operation. Ekehorn (*Nord. Med. Arkiv.*, Afd. i. 1909) made a study of 33 cases of renal tuberculosis. In 27 of these cases no operation was performed. In 6 cases a late operation was carried out, and they demonstrated the later stages of the disease, hence their inclusion.

In only 1 case out of the 33 investigated could it be said that spontaneous cure had taken place. In all the other cases the disease either steadily progressed, or, after a period of abeyance, manifested itself afresh. The relative improvement shown by some cases after the disease has been in existence for a considerable time generally indicated that the tuberculous process has completely destroyed the kidney primarily affected. No weight should be laid on such improvement, for, as a rule, it is merely temporary, and in the great majority of cases by the time that one kidney has been destroyed, the disease has spread to and has made serious inroads in other parts.

Several of the cases examined post mortem illustrated well the mode of spread of the disease in the kidney itself. In several cases the tuberculous lesion had remained limited to one area of the kidney, and it was found that the calyx from this area opened into the renal pelvis very low down, and that secondary infection of other parts of the kidney by way of the urine (the usual way) was thus prevented.

From the pathological findings in the cases examined Ekehorn is convinced that when in any case the diagnosis of unilateral renal tuberculosis is made, radical operative treatment should be undertaken without delay, for a cure by conservative treatment is very rare and is never certain. D. P. D. Wilkie.

Obstructive Calculous Anuria.

When the secretion of urine from one kidney is arrested by the impaction of a calculus in the corresponding ureter complete anuria may, according to Watson (*Boston Med. and Surg. Journ.*, 6th January 1910), result, through the influence of the so-called reno-renal reflex, even though the other kidney be normal or but slightly diseased. Similarly, after an operation on one kidney, if anuria sets in, it does not imply that the other kidney is extensively diseased as well, and in many such cases by simply cutting down and incising the latter the anuria may be overcome and the patient's life saved.

In about 30 per cent. of cases of renal calculus the disease is

bilateral, and the relative number of cases in which both ureters are simultaneously blocked in cases of bilateral disease is much larger than is generally stated, perhaps as much as 20 per cent. As the combined amount of functionally useful renal tissue in the two kidneys in many such cases is by no means small, a simultaneous nephrotomy of both kidneys is to be strongly recommended in all doubtful cases.

If a case of calculous anuria be seen early, one is justified in passing catheters into both ureters, and retaining them in position for a few hours. Eleven cases have been recorded in which this procedure restored the suppressed urinary function. This step may be supplemented by the administration of saccharine or large quantities of saline solution. In urgent cases, however, much time must not be wasted over such methods, but bilateral nephrotomy with drainage of both kidneys should be resorted to without delay.

D. P. D. WILKIE.

OBSTETRICS AND GYNECOLOGY.

By A. H. F. BARBOUR, M.D., LL.D.,
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and
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INVOLUTION OF THE PUERPERAL UTERUS.

THE processes by which the post-partum uterus involutes and returns to its normal ante-partum size and condition have long been in dispute, and, so far, no agreement has been come to regarding all points. Goodall, in a notable paper (*Amer. Journ. of Obstet.*, December 1909), makes an important contribution to our knowledge of the subject, and in the course of it opens up many questions of general pathological interest. He has directed his attention principally to the vessels of the puerperal uterus, and has been able to trace in them a remarkable series of changes, which have as their result the formation of what is practically an entirely new set of vessels in the uterus after each pregnancy. If involution is complete, the walls of the old vessels ought to be completely absorbed, but if, for any reason, this fails, *i.e.* if involution is incomplete, the degenerated tissues of the old vessels remain, and the result is, in the author's opinion, the production of the metritic uterus. The latter subject he deals with in a separate paper, which will be referred to later.

In the investigations he has carried out he has examined eighty uteri, including those of nulliparæ and multiparæ, the latter obtained at various periods from forty-four hours up to ten months post-partum. He has carefully excluded all cases in which any gross pathological lesion was present in the uterus or in the pelvis.

With regard to the muscle fibres, he agrees with most observers that they undergo a fatty degeneration, fat droplets early making their appearance. This fatty degeneration results in the total destruction and disappearance of some of the fibres, especially those in the media of the arteries, a view formerly advanced by Kölliker on theoretical grounds. He does not agree with Herschl that there is a complete fatty degeneration and absorption of all the muscle of the uterus, so that the entire musculature of the organ is renewed after each pregnancy. The degenerated muscle is largely replaced from the new fibres which develop in the walls of the regenerated veins as well as from the media of the arteries. While the muscle is reduced by this fatty degeneration, the connective tissue of the uterine wall undergoes a hyaline degeneration and absorption without any fatty change, so far as Goodall has been able to observe.

It is, however, his description of the vessel changes that makes the author's work such an interesting and, if his findings and interpretations are confirmed, such a valuable contribution to our knowledge of this important subject. In the nulliparous uterus the arteries in the middle third of the wall have walls presenting three distinct coats—intima, with its lining of endothelium and a well-marked elastic lamina composed of elastic fibres running parallel to the long axis of the vessel; media, composed of muscle fibres, together with some elastic fibres concentrically arranged; and adventitia, composed of fibrous tissue and very few elastic fibres. In the outer third of the uterus the vessels have the same structure. Just under the peritoneum there is a layer of elastic and fibrous tissue separating it from the underlying muscular bundles. The vessels of the inner third of the wall are characterised by the irregular shape of their lumina, and by the occasional swelling of the internal elastic lamina. The multiparous uterus differs from the nulliparous in certain respects, and it is possible in most cases to say from a microscopical examination whether the uterus has been pregnant. Goodall holds, however, that if involution has been complete, it may be impossible from microscopic examination of the wall alone to say whether the uterus has ever contained an ovum. The chief characteristic of the multiparous, as contrasted with the nulliparous uterus is the great increase in the amount of elastic tissue present, this increase being most marked about the vessels, but being also present in the subperitoneal layer and throughout the muscular wall, even in its inner third, where, in the nullipara, there are very few elastic fibres. The great increase in the

elastic tissue round the arteries of this latter area of the uterine wall is the most characteristic sign of a previous parturition. In the vascular zone many reduplications of the internal elastic lamina may be present in the arterial wall. These changes follow parturition in a vast number of cases, but they need not necessarily be present, and the author sets out to prove that the excess of elastic tissue is really an indication of incomplete involution, and that its great excess leads to the production of the metritic uterus. The elastic tissue arises as the result of incomplete absorption of the old vessel walls when the new vessel has formed itself in its interior.

The process by which the vascular system of the uterus is renewed after labour is taken up in great detail. It is found in the puerperal uterus forty-four hours after labour that there are two degrees of vessel changes; in the one the process is more advanced and must have begun before parturition, and in the other the change apparently dates back to the labour only. In all cases the vessel changes are for the purpose of reducing the calibre of the channel in consequence of the smaller amount of blood required after the termination of the pregnancy. The vessels which have undergone this narrowing previous to parturition are those supplying the placental area, the terminal branches of which have become thrombosed. The narrowing is brought about by a hyaline swelling of the intima, and especially of the elastica interna. This elastic lamina swells up enormously and loses its staining properties, so that it no longer stains black with Weigert's stain. The elastic fibres in the media undergo a similar change, and the muscle cells undergo fatty degeneration. This process goes on till an almost homogeneously staining hyaline mass takes the place of the vessel wall, and may invade the lumen also. When this degenerative process has gone on for some time regeneration begins. A new intima and a new elastic lamina and media are formed within the old swollen elastic lamina, and finally an adventitia also makes its appearance. After a time the old elastic lamina and media become completely absorbed, and there is left a complete new smaller vessel occupying the lumen of the old one. This change is best seen in the vessels of the placental area where the lumen has to be much reduced. In the other areas of the uterine wall the reduction of the lumen does not require to be so great, and there a new intima only may develop, a great part of the old media being incorporated with the new vessel. In order that these changes may occur, rapid tissue metabolism is necessary, and anything which retards either the anabolic or the katabolic process results in an imperfect end product. Before there can be complete regeneration there must be complete degeneration and absorption. If there is complete degeneration and absorption the new vessel has exactly the same structure as the old, and the uterus may be indistinguishable from a nulliparous one. If these pro-

cesses are incomplete, the so-called characteristic multiparous uterus results.

When the process of involution is interfered with from any cause, such as a chronic disease or acute infection, the elastic fibres of the internal lamina and media fail to degenerate properly. The more delicate muscle fibres of the media do, however, degenerate and disappear. The agent which causes this degeneration of the muscle apparently only acts as a stimulus to the more resistant elastic fibres, and the result is not an atrophy, but a hypertrophy of the internal lamina and the elastic fibres of the media. The result is that the new vessel which forms inside the lumen of the old one has walls composed for the greater part of elastic tissue instead of muscle. This elastic tissue also forms in the walls of the veins, and the result is a great increase in the total quantity of elastic tissue in the uterus generally. In a subsequent pregnancy, if involution is carried on naturally, this elastic tissue may undergo degeneration and absorption, and the uterine wall return to normal, but in the absence of pregnancy the elastic tissue in the wall is permanent, and the result is a metritic uterus. Age acts in the same way as acute or chronic diseases in interfering with the process of involution, hence it is found that in women over 35, parturition is followed by a great increase in the quantity of elastic tissue, and at a later age even the elastic tissue fails and regeneration is carried on by a less specialised tissue still, viz. fibrous tissue.

In earlier life, when involution is normal, the elastica of the vessels completely degenerates and is absorbed. It is reformed in normal amount, as is also the muscle of the media. From this muscle of the media of the arteries, and of the wall of the veins, many new muscle fibres of the uterine wall are derived, and the uterus returns to normal. Any interference with the process results in the substitution of a less specialised tissue for muscle, at first elastic and later fibrous tissue, and the excess of these elements in the uterine wall results in the metritic uterus.

In the development of this argument the author relies principally on the findings of two cases, one of chronic Bright's disease and the other of syphilitic arteritis, and it is a little difficult to regard all the excessive fibrous and elastic tissue in the vessel coats as due simply to the retarded involution due to the general results of a chronic disease and totally to exclude the specific effect of the particular diseases from which these women died. The difficulty of obtaining material that is absolutely normal for such an investigation is very great, and it cannot be said that the conclusions drawn are unwarranted when the other material at his disposal is taken into consideration.

The Metritic Uterus.

Goodall devotes a separate paper (*Amer. Journ. of Obstet.*, January 1910) to the pathological and clinical aspects of the metritic or fibrotic uterus. The pathology has been already indicated, and it will be gathered that, according to the author, the metritic uterus can only be met with in parous women. The prominent symptom is always hæmorrhage, at first taking the form of menorrhagia, and later of metrorrhagia. The physical signs are a uniform enlargement of the uterus and a great increase in its hardness; there is usually also tenderness. The hæmorrhage always comes on before the menopause, and is, as a rule, not relieved by curetting unless an associated endometritis is present. The bleeding may be due to the inability of the fibrotic vessels to contract, or to the failure of the muscular wall of the uterus, now largely composed of fibrous and elastic tissue, to retract so as to compress the vessels. Probably, in most cases, both factors act. The treatment consists in prophylaxis in the puerperium to ensure proper involution. From local treatment, apart from hysterectomy for severe cases, little good is got, but diagnosis may not be made until a curettage of the uterus is performed, when the hard grating of the instrument against the sclerotic wall is characteristic.

INFECTIOUS DISEASES.

By CLAUDE B. KER, M.D., F.R.C.P.,
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Intestinal Hæmorrhage in Enteric Fever.

Gaultier (*La Quinzaine Thérapeutique*, 25 janvier 1910) considers that hæmorrhage in enteric fever, as in other diseases in which blood-pressure is usually low, is probably occasioned by an increase of arterial tension, and should therefore be treated by remedies which lower the blood-pressure. He had previously treated, with success, cases of hæmoptysis in pulmonary tuberculosis with an aqueous extract of mistletoe, and suggests that this drug might be applicable also in the treatment of typhoid hæmorrhage. Bouchard and Teissier have pointed out that a relatively high arterial tension is a valuable premonitory sign of bleeding in enteric fever, and instances have been reported of patients suffering from diabetes—a disease in which the pressure is high—contracting enteric fever and succumbing, with profuse hæmorrhages. Gaultier reports a case of enteric fever in a young boy who was admitted to hospital much prostrated and with severe nervous symptoms. His pulse was at first feeble, rapid, and dicrotic, and the arterial tension measured by Potain's sphygmomanometer varied from 8 to 9. Six days after admission a relatively high tension pulse was

observed, the readings being from 14 to 15, while the dicrotism disappeared. This change in the blood-pressure was shortly followed by an exceedingly copious hæmorrhage. Ergotine was administered, and the baths, which had been up to that time employed, were discontinued. The sphygmomanometer reading next day was still relatively high—15 and in the evening another profuse bleeding occurred. This return of the hæmorrhage, in spite, or because, of the ergotine, induced Gaultier to inject 2 c.c. of his solution of an aqueous extract of mistletoe, together with a dose of morphine. The pulse became more rapid, and the pressure fell considerably afterwards. The mistletoe solution was again employed on the following day. There was no further hæmorrhage, and the pressure remained low during the succeeding week. The patient made an uninterrupted recovery.

It is obvious that satisfactory deductions cannot be made from a single case. Many of us, for instance, have found morphia effective in the treatment of typhoid hæmorrhage when ergotine has failed, and it is significant that morphia was injected together with the first dose of the mistletoe extract. But there is much to be said for a remedy which lowers the blood-pressure so effectively, and it might well be worth while following up Gaultier's observations. In any case, the emphasis which he lays on the prognostic value of a relatively high tension pulse in enteric fever should do much to encourage systematic observations of the blood-pressure in that disease.

Paratyphoid Fever.

Sacquépée and Bellot (*Le Progrès Médicale*, January 1910) describe a small outbreak of this interesting condition which occurred in a French garrison. Of 250 men, 19 developed the illness in a period of a week. The cases varied in gravity, the majority being mild in character, but a certain proportion showed severe meningeal symptoms. In 3 patients sharp head symptoms were prominent from the start, and intense headache, marked neck rigidity, and Kernig's sign were all present. Constipation and a relatively slow pulse were also observed. The spinal fluid was quite clear. With these exceptions the cases presented all the features of moderate or mild typhoid fever, lasting from 15 to 22 days, and, with the exception of one instance of myocarditis, free from all complications.

Bacteriologically the outbreak was found to be due to the bacillus paratyphoid B. which was recovered from the blood of 7 out of 8 patients examined. Of 12 patients it was found in 10 in the stools and in 2 in the urine. The agglutination tests were positive with cultures of the paratyphoid B., but negative with the paratyphoid A. and typhoid organisms.

The suddenness with which this small outbreak commenced and

the rapidity with which the sufferers were infected pointed strongly to food or water contamination. The fact that the water supply was admirable, and moreover was common to other corps not affected, caused attention to be directed chiefly to the food. It was discovered that a man employed in the kitchen had a few days before the commencement of the definite outbreak been affected with headache, malaise, and gastric disturbance, but had nevertheless remained on duty. An analysis of his stools proved the presence in great quantities of the bacillus paratyphoid B., and his blood-serum agglutinated cultures of this micro-organism in a dilution of 1 in 80. It is added that these bacilli remained in the stools for at least three months. It is reasonable to suppose then that the gastric disturbance originally complained of was in reality an abortive attack of paratyphoid fever, and that the cook was acting as a "carrier" case and so infecting his comrades.

Carriers.

The above interesting example adds another condition to the diseases the propagation of which, by means of healthy carriers, may be regarded as established. A very similar instance comes from India. Macrae (*Indian Medical Gazette*, October 1909) reports an outbreak of cholera among the nurses of the Presidency General Hospital in Calcutta. Seventeen persons were infected, and of these 12 were seriously ill and no less than 8 died. With 4 exceptions the individuals attacked were members of the nursing staff. Nearly all were taken ill on the same day, and a period of 4 days covered the dates of onset of the remainder. Here, again, attention was at once drawn to the feeding arrangements of the nurses. It is interesting to note that a native sweeper, who was one of the patients, received as his perquisite the remains of the nurses' meals. On the 28th of July he obtained food in this manner, and investigation of the menu of that day caused suspicion to fall on some custard sauce. It is possible that some of this may have been carried as a treat to the three children who were the only patients attacked. The water supply appeared to be above suspicion. All the nurses attacked partook of this suspected meal as did the infected sweeper. The incubation period of cholera, from 1 to 3 days, also suggested the 28th as the probable date of infection. As at no other meal about that date were all the nurses attacked present together, the probability is strengthened that infection took place on that occasion. The custard sauce was the only dish served cold, and had been prepared early in the day, and appeared to be the only dish likely to cause trouble. An examination was made by Haffkine of the hands of the 12 servants connected with the nurses' kitchen and cook-room. Comma bacilli were found on the hands of two *masalchis* whose duties included the care of the ice supply, the peeling of the potatoes, &c., and the washing up of the dishes. It then

became necessary to ascertain whether these *masalchis* harboured comma bacilli in their bowels, and Haffkine succeeded in isolating very typical-looking comma vibrios from the stools of both. The men themselves were apparently quite healthy, and the evidence certainly points to their having transmitted cholera in the manner alleged, the case being quite analogous to that of the typhoid carriers reported who are so often, when dangerous, found to be connected with the preparation or serving of food. Macrae quotes in support of his view the result of some investigations undertaken in Russia during the recent St. Petersburg epidemic. No less than 2440 stools of persons living in close contact with 600 cholera patients were examined and the vibrios of cholera were found on 125 occasions. All these individuals, then, were potentially infective. In the majority, however, the germs did not remain long in the stools. At Calcutta this point could not be investigated, as the *masalchis*, being imbued with the idea that they were being subjected to some form of witchcraft, declined to remain under observation.

Menstruation and Enteric Fever.

Stengel (*University of Pennsylvania Medical Bulletin*, December 1909) has an interesting paper on this subject. He considers that we are perhaps too apt to attribute severe attacks of infectious disease to a special degree of virulence of the infection, whereas often the condition of the patient is more important. He has particularly studied the effect of the occurrence of menstruation on the onset and course of enteric fever, as the effects of a normal functional process can be better determined than those of pre-existing nervous or other conditions. He notes that when the menstrual period coincides with the commencement of the fever, the onset is often unusually severe, and especially so if the menses fail to appear. The temperature reaches a high level from the first, and, indeed, for some days may be hyperpyretic. Nervous symptoms are prominent. Coldness, shivering, and extreme sensitiveness to cold are often present, and pain in the lower part of the abdomen and sometimes hysterical manifestations are also encountered. These symptoms may be repeated at the next menstrual period, whether the flow is present or not, and rises of temperature, otherwise unexplained, can be occasionally accounted for in this manner. In dealing with these cases, Stengel deprecates the cold bath, however much the hyperpyrexia would seem to indicate it. He has had most success with sedatives, and gives a striking chart showing the improvement in the temperature of a patient treated with the hypodermic injection of $\frac{1}{6}$th gr. of morphia. If hydrotherapy is used, care should be taken to employ it in a modified way, and to use either baths of a temperature of about 85° or cold or warm sponging.

It is certainly remarkable that so little is to be found on this

interesting subject in the text-books. There can be little doubt that menstruation may modify most profoundly the course of enteric fever. Stengel does not appear to believe a relapse is ever precipitated by the occurrence of the menstrual epoch, although he describes cases with at least a week's fever. But he mentions an instance of three recurrences of fever at monthly intervals occurring in a patient of 46. Some of us have seen, however, true relapses ushered in by menstruation, and accompanied by rose spots, enlarged spleen, and all the classical symptoms of the disease, and often in such cases the abrupt onset, high fever, and hysterical manifestations are very much in evidence. Symptoms of pain and collapse, moreover, are not unusual, and Stengel doubtless has these in his mind when he raises the interesting point that a mistaken diagnosis of perforation may be made. Those who are interested in the subject of the relation of menstruation to infective disorders may also be referred to an article by Welch on the "Variations of Temperature in Phthisis during the Menstrual Period" (*Lancet*, 5th March 1910).

DISEASES OF THE EAR, NOSE, AND LARYNX.

By A. LOGAN TURNER, M.D.(Edin.), F.R.C.S.(Edin.),
and
W. G. PORTER, M.B.(Edin.), F.R.C.S.(Edin.).

The Treatment of Ozena.

The attention of the rhinologist is still directed towards a method of successfully treating fœtid atrophic rhinitis. Some of the various therapeutic remedies which are from time to time introduced for the treatment of other affections are experimented with in the hope of giving satisfactory results in this troublesome nasal affection. Some are soon discarded, others are persevered with for a time with more or less success. Our purpose is to refer shortly to some of the means which have been recently adopted. It was hardly to be expected that an attempt would not be made to apply Bier's congestion treatment in this connection. Fein and Réthi experimented with it in 1906, but as there does not appear to be any more recent literature dealing with it, one must assume that this remedy has not proved satisfactory.

Beck has devoted considerable attention to the treatment of pathological conditions of the nasal chambers and their accessory sinuses with bismuth paste (*Journ. of Amer. Med. Assoc.*, 1909). Two cases of ozæna were treated in this way. In each case the nasal chambers were temporarily filled with a paste containing the sub-

nitrate of bismuth, vaselin, white wax and paraffin, the naso-pharynx being temporarily occluded with a tampon to prevent the material from passing into the throat. The paste is introduced by means of a specially devised syringe. The operation was repeated every day for two weeks, and during this time the crusts did not form. During a further period of one month the injection was made every other day. At the end of that time the crusts had ceased to form, and the odour had disappeared. The patient was then taught how to carry on the treatment at home. The further history of these cases is not recorded, so that we have no knowledge either of the length of time that the treatment was necessary or of its ultimate result.

Zimmern and Gendreau give their experience of the high frequency treatment (*Bull. de la Soc. de l'Internat. des Hôpitaux de Paris*, November 1909). After carefully cleansing the nasal cavities, the current is applied directly to the nasal mucosa. Nineteen patients were treated in this way from November 1908 to July 1909. Of these, sixteen have ceased treatment because they have so much improved, crusts and fœtor being absent with cessation of frontal pain. The remainder at the conclusion of their treatment were still troubled with slight crusting. The nasal mucous membrane had lost its dry, pale appearance, and had become more tumid, moist, and pink. During the four months following the treatment, and up to the publication of the results, the patients had been twice inspected. Of the sixteen patients who had so much benefited, two showed recurrence of symptoms—the crusting and fœtor had returned. Of the remaining fourteen, the cure had persisted from five to eight months after the cessation of treatment. The authors, therefore, regard high frequency as one of the best methods of treating this intractable condition.

Treatment by ionisation has recently been employed, with an improvement in the technique, but probably there are as yet insufficient data to warrant definite statements as to its sphere of usefulness. Watson Williams, in his recent publication, *Rhinology*, states that he has used ionisation in the treatment of atrophic rhinitis with a fair measure of success. For the nasal passages, metallic ions are mostly used, such as copper, zinc, and magnesium. He employs a thin, flat, polished metal electrode half an inch wide and about three inches long. Around this is wound a thin layer of absorbent wool, which is introduced into the nasal passage after cocainisation. The absorbent wool is previously soaked with a 1 to 4 per cent. solution of a suitable salt corresponding to the metal employed for the electrode, *e.g.* sulphate of copper, zinc, or magnesium. The intra-nasal electrode is always connected with the positive pole; the negative pole is placed under water in a basin into which the patient places one hand. The current is then gradually turned on till the milliampèremetre shows that five, ten, or fifteen milliampères are passing. The sitting should be from

ten to thirty minutes. The opposite nasal passage is best treated a few days later. Subsequent applications may be made about a fortnight later, and the treatment may require to be given several times before a beneficial result or cure is brought about.

Botey again deals with the treatment of ozæna by the submucous injections of paraffin (*Ann. des Mal de l'Oreille, &c.*, Paris, November 1909). He considers that this therapeutic measure has won its place and can no longer be regarded as merely on trial. Crusts and fœtor disappear, and consequently its employment is justified. At the same time he is careful to point out that such a result is not obtained in every case. When the atrophy is very marked, so that the nasal chambers are exceptionally roomy, the injections of paraffin, even when made with the greatest care, do not suffice to diminish the roominess of the cavities. In such cases, too, it is very difficult to make a satisfactory injection, because the thin mucosa tears so readily and the paraffin escapes into the cavity of the nose. Another difficulty met with is in the attempt to introduce the paraffin into the posterior third of the inferior turbinated and the corresponding part of the nasal septum. This is often the cause of the partial success of the treatment. As the majority of his patients treated by paraffin injection did not return, he considered this as proof of the satisfaction which they had obtained. Others who did return at the end of some months or years demonstrated the persistence of its good effects. If there was a recurrence of the symptoms a fresh injection was made.

Paraffin in solid form has replaced the old method of fluid injection. As there is a risk of the solid thread of paraffin remaining localised at the seat of injection, Botey makes a preliminary introduction of warm sterilised water beneath the mucous membrane. In this way a larger quantity of paraffin can be used, which can find its way into the larger area thus prepared for it.

In connection with the treatment of ozæna by diminishing the roominess of the nasal chamber, attention may be drawn to that variety of case in which there is a unilateral affection associated with pronounced deflection of the nasal septum, the atrophic rhinitis being on the side of the concavity. The bringing of the septum into the mesial line and the consequent narrowing of the affected chamber is followed by considerable amelioration of the patient's prominent symptoms—the crusting and fœtor.

It would have been strange if no attempt had been made to treat this condition by means of vaccines and lactic acid bacilli. We have a preliminary report on the treatment of a fœtid atrophic rhinitis by Skillern and Burvill-Holmes (*New York Med. Journ.*, 15th August 1908), but we have not been impressed by the results obtained in the two reported cases. As the cause of ozæna has not been assigned to any distinct organism, vaccine therapy can hardly be expected to lead to

any definite result. The authors obtained a comparatively pure culture of Abel's bacillus mucosus, which some observers have found constantly present in the discharge, but it was found impossible to plate it out. It appeared to thrive badly on all kinds of media, and was choked by the overgrowth of other organisms. Finally, a "miscellaneous" vaccine was procured; at first it was administered twice each week, and then in increased dose twice per month. The appetite and general appearance of the patients improved; there was a diminution in the size of the crusts, the nasal secretions became thinner, and the fœtor was not so marked. In neither case did there seem to be any permanent improvement.

Goodale has reported some cases in which he used a preparation of lactic acid bacteria. The cultures were prepared in the laboratory, and the patients employed them by means of a nasal spray. The crusts were first removed from the nose twice weekly, and then the spray was used. Fresh preparations were given to the patients each week. The spray was cleansed with alcohol on each occasion before introducing the culture fluid. The general impression which he formed of this line of treatment was that benefit resulted in some cases comparable to that obtained by the use of argyrol (*Boston Med. and Surg. Journ.*, 15th July 1909).

Tracheoscopy, Bronchoscopy, &c.

Considerable improvements have been made of late in the methods for the direct examination of the larynx, bronchi, and œsophagus. The well-known instruments of Brünings of Freiburg have especially undergone recently important modifications.

There are two methods of illuminating tubes for endoscopy. In the one the lamp is carried at the distal end of the tube—this being the principle adopted by Chevalier Jackson—in the other the lamp is external to the tube. There are several objections to the first method: the greatest is, that any secretion which may be present at once blurs the lamp, and nothing more can be seen until it is cleaned.

The illumination also is not so good as that in which parallel rays of light are projected down the tube, because immediately around the lamp there is an area which is brightly illuminated, while the surrounding parts are in darkness; further, the method is not adapted for use with telescopic tubes.

External lamps may take the form of an electroscope, *i.e.* a lamp attached to the handle of the tube (Kasper Brünings), or may be carried upon a forehead band (Kirstein). It is a matter of opinion which of these is the better. With the former the management of the illumination is easier, as the patient's head need not be kept so still: if, however, there is much coughing, the lamp may be obscured, and, except in Brünings' (Brünings' *Die direkte Laryngoskopie*, &c., Wiesbaden, 1910,

verlag. von J. F. Bergmann) most recent electroscope, operative interference becomes more difficult. Brünings' newest model, however, permits of the introduction of instruments into the tube through a slit in the mirror holder, which permits of the use of a rigid instrument within the tube while the lamp is in the proper position.

Brünings has modified (*Verh. d. v. deutscher Laryngologen*, Würzburg, 1909) the inner telescopic tube to permit of its being pushed more readily downwards through the outer tube, one edge of the watch spring by which this is done being serrated; a firm hold can thus be obtained, even when the operator's hands are wet. A small lever is placed on the outer tube by which further descent of the inner tube may be arrested. Brünings has introduced an important modification of his instrument whereby to diminish the forward pressure of the tube within the air-passages. This is done by exerting pressure against the neck from the outside. He calls this contra-pressure (*gegendruck*) autoscopy. The apparatus consists of a plate attached by a rod to the lower end of the handle of the electroscope. The plate is adjusted against the thyroid cartilage after the tube has been introduced, and it is then fixed by a catch. This procedure not only makes the examination much easier for the patient, but it is also of exceptional value to the surgeon in operation cases, as it allows him the free use of both his hands.

One further attachment of the instrument may be mentioned, which Brünings calls a tracheograph. This enables the surgeon to mark on the surface of the patient's chest the position of any abnormality within the air-passages. It consists of a ladder-like steel hook, which is attached by two projections to the handle of the electroscope, upon which it is movable. A pencil is attached which can be fixed at any desired point on the carrier. Before the introduction the end of the pencil is fixed opposite to the distal end of the tube. During tracheoscopy the pencil will always occupy the same position in relation to the distal end of the tube, and any desired point can therefore be marked on the skin.

THERAPEUTICS.

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Strophanthin in Cardiac Disease.

Recently several writers have advocated the use of strophanthin injections in the treatment of heart failure. The drug is not well borne by the stomach, and as a rule is injected either directly into the vein or deeply into the muscular tissue. Neither method is ideal.

Unless great care is taken the intra-venous method gives very troublesome inflammatory irritation if any of the fluid escape into the surrounding tissue. The intra-muscular injection is said not to be very painful if the part is massaged well after the injection. By both these methods a very rapid action of the drug is got, coming on in a few minutes and lasting for several hours. The drug is so active that the dosage becomes of importance. There is always the risk of an overdose, and already some ten fatal cases are on record. The signs of an overdose are similar to those of digitalis poisoning, viz. headache and nausea, tight feeling and oppression in the chest. The heart is markedly slowed, and is often arhythmic. The daily dose advised by Crispolti [1] for intra-muscular injections is about 1 mg., but he has, if necessary, given two or three doses of this size in the twenty-four hours. For the intra-venous injection he advises from $\frac{1}{4}$ to 1 mg. Crispolti used the drug in a series of thirty cases of severe cardiac failure of all types, organic lesions, myocarditis, idiopathic tachycardia, failing heart in pneumonia. Pennesi,[2] another Italian observer, has used strophanthin in ten cases, but states that if improvement does not follow the first or second dose there is no good persisting in this treatment.

Stone [3] advocates strophanthin in the treatment of failing heart of pneumonia.

Most of these observers seem to have used amorphous strophanthin, but a recent American writer, Bailey,[4] prefers a crystalline strophanthin which is stronger than the amorphous form: 1 mg. of the amorphous strophanthin corresponding to 0·4 mg. of the crystalline variety, so that the latter is more than twice as active. Using the crystalline preparation in daily doses of $\frac{3}{10}$-$\frac{5}{10}$ mg., given by deep intra-muscular injection, no very striking effect was produced in a series of twenty cases showing signs of loss of compensation. In a later series, consisting of twenty-seven cases, the dosage was increased and more definite results were obtained. Under careful observation of the effects produced by a dose of half a milligram with the aid of sphygmomanometer and sphygmograph, if no effect on the circulation was seen in eight hours, this dose was repeated. At no time was more than half a milligram given at a dose. In some cases $1\frac{1}{2}$ mgs. were given in the twenty-four hours by intra-muscular or intra-venous injections. Though he has himself used such large doses, Bailey does not advise more than half a milligram as a daily dose, and in no case should the dose be repeated in twenty-four hours except after careful study of the circulation. Crystalline strophanthin, he says, is a valuable cardiac stimu-

[1] *Il policlinico*, 1909, p. 248.

[2] *Ibid.*

[3] *Brit. Med. Journ.*, 19th August 1909, in *Ther. Gaz.*, January 1910.

[4] *Journ. Pharmacol. and Exp. Therap.*, October 1909.

lant where compensation is broken in chronic interstitial myocarditis, or in any form of chronic valvular disease. It should be used only in emergencies, and is not suitable for continuous administration. He notes that the blood pressure was only raised by a few millimeters in most cases, but the rise was greater when the systolic pressure was as low as 95 to 110. The size of the heart to percussion was diminished in cases of marked dilatation, and many murmurs due to dilatation completely disappear. The cardiac rate and rhythm were markedly affected, and in two cases showed signs of bigeminal action with early extra-systole.

Acetanilide.

In recent years it has become customary to prescribe acetanilide along with caffeine and bicarbonate of soda, and many men think that by doing so they are lessening the toxicity of acetanilide. A series of experiments carried out by Worth Hale do not afford any support to this theory. His results show that both in cold-blooded and warm-blooded animals caffeine is of little or no benefit in removing the toxic effect of acetanilide on the heart, and in some cases it apparently exerted a harmful effect. The same holds true for the blood-pressure. Feeding experiments further bring out the absence of any antagonism between caffeine and acetanilide, as in all cases the addition of caffeine caused more rapid death, and made a smaller quantity of acetanilide fatal. A mixture of acetanilide and caffeine proved twice as toxic as either drug separately.

On the other hand he was able to find more support for the combination of sodium bicarbonate with acetanilide, as he found that it increased the rate and efficiency of the isolated heart damaged by acetanilide, while in the intact animal the addition of the bicarbonate increased the duration of life and raised the toxic dose of acetanilide.[1]

Semi-specific Disinfectants.

Beckhold gives an interesting account of certain experiments which he has carried out to illustrate an aspect of disinfection, which is not generally appreciated. He points out that whereas the protective substances elaborated by the tissue cells to repel or destroy invading bacteria and bacterial products are highly specific in their selective action, the chemical bodies used in disinfection are more general in their action and are used indiscriminately against all pathogenic germs. Though it is recognised that certain micro-organisms, *e.g.* tubercle bacilli and anthrax spores are more resistant than most other organisms to disinfectants, little seems to have been done to determine whether any of the common pathogenic germs are more susceptible to this or

[1] *Journ. Pharmacology and Exper. Therap.*, August 1909.

that disinfecting agent. As a result of an elaborate investigation into the disinfecting power of a series of halogen compounds of the naphthol series, he has been able to find many instances where one kind of germ is specially sensitive to a disinfectant in a dilution which is apparently incapable of inhibiting growth of other pathogenic organisms. To this special susceptibility he gives the name semi-specific. A knowledge of the special susceptibility of any given form may prove of considerable value in choosing a suitable disinfectant, and may eventually lead to greater efficiency in the treatment of diseased conditions.

Beckhold instituted such a comparative research with a series of halogen derivatives of β-naphthol which possess very marked disinfecting power in weak solutions, and are relatively non-toxic. They dissolve readily in solutions of sodium or potassium hydrate, forming solutions which are free from odour and are stable if protected from light.

The following table illustrates the marked differences which exist in the susceptibility of various organisms to different bodies of the series as regards the power of inhibiting their growth.

	Staphylococci.	Streptococci.	B. Diphtheriæ.	B. Paratyphosus.	B. Coli.
Lysol . . . . (Reckoned for cresol content)	1:3000	1:10,000	1:20,000	1:400	1:800
β-naphthol . . .	1:6000	1:8000	1:10,000	1:4000	1:8000
Chlor-β-naphthol . .	1:20,000	1:20,000	1:10,000	1:4000	1:12,000
Brom-β-naphthol . .	1:20,000	1:20,000	1:10,000	1:4000	1:8000
Dichlor-β-naphthol . .	1:40,000	1:30,000	1:20,000	1:4000	1:16,000
Dibrom-β-naphthol . .	1:80,000	1:20,000	1:40,800	1:4000	1:32,000
Trichlor-β-naphthol .	1:50,000	1:20,000	1:20,000	1:400	1:20,000
Tribrom-β-naphthol .	1:250,000	1:60,000	1:400,000	1:1000	1:1300
Tetrabrom-β-naphthol .	1:250,000	1:60,000	1:200,000	1:800	1:800
Pentabrom-β-naphthol .	1:50,000	1:40,000	1:15,000	1:800	1:400

These dilutions inhibited the growth of the different organisms in bouillon cultures. The marked selective effect was further seen in another set of experiments, which proved that none of these bodies were able to kill the tubercle bacillus. As a practical test of their value, Beckhold[1] attempted to determine their suitability for surgical sterilisa-

[1] *Zeit. f. Hygien.*, 28th October 1909.

tion of the hands. He found that the hands could be made absolutely sterile by three minutes' washing in a watery solution of spirit sap. kal. to which 10 per cent. of a mixture of tribrom- and tetrabrom-β-naphthol was added, if this was followed by five minutes' use of a 70 per cent. solution of alcohol containing 1 per cent. tri-tetrabrom-β-naphthol.

Adrenalin in Osteomalacia.

Leon Bernard reports an extremely interesting case of chronic osteomalacia, which was apparently cured by persistent subcutaneous injections of adrenalin. The patient, aged 38, had already suffered from a severe attack commencing in 1889, with the symptoms of difficulty in walking, increasing pain and asthenia. She consulted various specialists, but the condition was not diagnosed till 1893, when she fractured two limbs while undergoing a special cure by a nerve specialist. When the true state of affairs was recognised in 1893 by Camperon, the bones were so far involved that she had lost height. After treatment for eighteen months with complete rest, she began to improve in health, and in 1895 was able to move about. Two years later she seemed fairly well, was able to take long walks, and had increased 7 cm. in height. She remained well for four years, but in 1899, after a severe mental shock, followed by privation and hard work, she became asthenic and was upset mentally, which condition persisted. The monthly periods became very profuse, and in 1903 a painful swelling developed in the arm. In the succeeding year similar swellings appeared in the right great toe, and in 1905 the left arm and left great toe became similarly involved. The bone involvement gradually progressed, so that in October of 1905 there was great deformity and bending of various parts of the bony skeleton, and she presented a typical picture of osteomalacia. Despite treatment of all kinds—electricity, hot air, arsenic, mercury, phosphorus, &c.—no improvement was obtained till in November 1907 adrenalin injections were tried. The dose was 1 c.c. of a solution containing 1:1000, and this amount was every second day injected into the subcutaneous tissues. After three months' treatment, owing to difficulty with the menses, the adrenalin was omitted during menstruation. Distinct improvement was obtained after the thirtieth injection. In September 1908 an attempt was made to restrict the dose of adrenalin to one injection every third day, but this had soon to be given up, and the original plan was resumed. Eventually a very good cure was obtained, the pains became less violent, she became able to move the limbs, and the swellings disappeared. Over 100 injections were given. The individual doses caused little disturbance except a trifling palpitation, coming on in fifteen minutes and lasting for two hours, and he concludes that the subcutaneous injection of adrenalin is harmless, even if used for long periods. In this particular case it is claimed that

the morbid process was arrested, the bones were healed, deformities removed, and general health restored by the persistent use of adrenalin.

Quite a number of cases are already on record in which adrenalin was used in osteomalacia. The result is rather inconstant. In twenty cases, cure or amelioration has been obtained, but in fifteen cases adrenalin was unsuccessful. Bernard[1] suggests, as a possible explanation, that osteomalacia is a clinical syndrome characterised by decalcification of bone but not always depending on the same etiological factors. He thinks it possible that adrenalin may act only on some of the causes, hence its relatively inconstant therapeutical effect. In every case it is worth while giving a prolonged trial to adrenalin, which in this case only showed benefit after the thirtieth injection.

NEW BOOKS AND NEW EDITIONS.

Infectious Diseases. A Practical Text-Book, by CLAUDE BUCHANAN KER, M.D.(Edin.), F.R.C.P.(Edin.), Medical Superintendent, City Hospital, Edinburgh, and Lecturer on Infectious Diseases to the University of Edinburgh. Oxford Medical Publications. London: Henry Frowde, and Hodder & Stoughton. 1909. Price 20s.

A PRACTICAL treatise on infectious diseases has for some time past been a felt want. No doubt in many of the excellent modern "Systems of Medicine" the acute infectious diseases have received lengthy and elaborate discussion; but no separate work on the subject has been published in our country of very recent date. The book before us goes a considerable way towards supplying the want. It is true that many important diseases now clearly recognised as infectious are unnoticed, and it seems regrettable that, while so uncommon a malady as relapsing fever has been accorded a chapter, no place has been found for the pandemic influenza with all its malign significance to the health of communities. Some explanation of this, however, is furnished by the author, who indicates that he confines his work almost exclusively to those infectious diseases which have passed under his personal observation as Medical Superintendent of the Edinburgh City Hospital. Indeed the personal element (*i.e.* personal experiences and opinions) is made to bulk so largely all through the book, that, but for the apologetic note in the preface, criticism might fasten upon this as hardly in keeping with the idea of a "text-book" and more suggestive of a volume of "clinical lectures." This, however, may have been to a

[1] *La Presse Méd.*, 20th November 1909.

considerable extent unavoidable in a work designed to give prominence to the clinical side of the subject from which it largely derives its value, representing, as it does, in elaborate form, the author's clinical teaching and demonstrations to his classes in the Edinburgh City Hospital. Bacteriology and pathology have purposely been excluded, except in their clinical application.

Dr. Ker's standpoint is that of the fever-hospital physician, which, while it embraces a wide and varied experience, and rightly imparts an authoritative character to the work, is not free from limitation, in so far as it lacks the means of observing the remoter effects of the various infectious diseases upon the health. Hence statements are here and there to be met with which a wider clinical experience would probably have considerably modified.

In an Introduction a brief sketch is given of the doctrines of infection and immunity, and of some points in the general pathology and treatment of fever, which will be found to be in harmony with the current views entertained on these subjects.

The first part of the book deals with the Exanthemata. The clinical features of the various eruptive fevers are portrayed with accuracy and care, and great pains are taken here—as all throughout the book—with the subjects of diagnosis and "differential diagnosis." The distinctions dwelt upon as between some forms of measles and rubella cannot be regarded as entirely clearing up the acknowledged difficulty. Referring to the rarity of second attacks of measles, Dr. Ker, while admitting that such may occur, states he has never satisfied himself that he has seen one. Dr. Ker makes light of the cardiac complications of scarlet fever, giving his own experience, and quoting that of other hospitals to show how rarely endocarditis with permanent heart disease resulting from it occurs. Enquiry into the history of cardiac disease in young people treated in general hospitals, as well as the experience of many practitioners, would tend rather to support the view expressed by Professor Osler, that endocarditis is not very uncommon in scarlet fever, and that the cardiac complications of that disease are often latent.

Of the illustrations of the exanthemata, it may be observed that the photographs are better than the coloured plates.

Typhoid Fever and Diphtheria embrace the largest section of the book. Dr. Ker is manifestly in his element in dealing with these diseases, and his descriptions of their symptomatology and whole clinical history are admirable; while the subject of treatment is gone into with great minuteness of detail, and much therapeutic information made available as the result of his long and well-utilised experience.

The ultimate advantage of some points of treatment in typhoid fever may be fairly open to question, as, for instance, the calomel and irrigation method, and the ingestion of large quantities of cold water,

notwithstanding the evidence adduced in their favour; and the same remark may be made as to some of the plans of dieting which are advocated.

Dr. Ker gives strong testimony to the value of the open-air treatment of the broncho-pneumonia of whooping-cough and measles.

The chapter on Epidemic Cerebro-spinal Meningitis is a highly interesting study of the disease in a series of 152 cases recently treated in the Edinburgh City Hospital. The whole clinical characters of this formidable malady in its varied types and phases have been carefully observed, and are set forth in a vivid and impressive manner. Indeed the chapter forms an important contribution to our knowledge of the subject. Dr. Ker reports most favourably on the therapeutic value of Flexner's serum in the treatment of this disease.

The book concludes with a short chapter on Fever Hospital problems, in which questions relating to isolation, cross infection, return cases, &c., are discussed, and objections to hospital treatment dealt with. While many good points are made, it nevertheless seems fairly clear that, alike in matters of hospital construction and administration, we have not yet attained to finality.

Dr. Ker is to be congratulated on producing an excellent book. It contains a large amount of valuable information communicated in an easy and readable style; and proves the author to be possessed of the faculty of accurate observation, together with fine discrimination, and a sound clinical judgment. The work may be confidently recommended to practitioners, teachers, and medical officers of health.

Diseases of the Heart. By JAMES MACKENZIE, M.D. London: Henry Frowde, and Hodder & Stoughton. 1909.

AMONGST those who have within recent years contributed to the progress of our knowledge of circulatory problems, there is no one to whom we are more indebted than to the distinguished author of the volume now before us. Dr. Mackenzie is not only a most accurate observer, possessed, at the same time, of remarkable dexterity in the use of modern apparatus; he is also a bold and original thinker, not contented to follow the beaten track, but determined to reach the central truth of every subject.

In his former work, he produced an enormous mass of valuable observations derived from the application of the graphic method to the heart and blood-vessels, from which he was able to draw numberless important, and many novel, conclusions. The present volume, also containing a wealth of clinical results, goes much further than its predecessor, and is a brilliant example of induction as applied to

scientific problems. It is even more than this, as it takes advantage of the most modern modes of thought—the scientific philosophy as we may call it—not merely reasoning from a large number of facts to general principles, but employing a hypothesis which will explain the phenomena until it is proved to be inadequate for the elucidation of a larger number of observations.

After a general outline of the principles underlying the production of heart failure, in which the object of the circulation, the mass of the heart muscle, the meaning of heart failure, the limits of reserve force, and the characters of heart failure are discussed, the author at once plunges into a consideration of the fundamental functions of the heart muscle, and gives a summary of the views enunciated in Gaskell's historic paper. The author cannot be regarded as a rampant myogenesist, as he considers it is possible that the two doctrines—neurogeny and myogeny—may be reconciled along the lines suggested in the following paragraph (pp. 6 and 7).

"From the consideration of the physiology of the cell, it may be said that every function possessed by a cell in the fully-developed state exists partially developed in the primitive form. However specialised the function may be, nervous, muscular, or secretory, these functions can be referred back to some property possessed by the primitive cell. The cells which constitute the primitive structure of the body all start equally endowed, and it is by a gradual process of specialisation that each takes on its peculiar function, while as it acquires a high degree of specialisation it gradually loses those functions it no longer exercises. The functions possessed by the primitive cells can therefore be deduced not only from the results of direct observation, but from the specialised functions of the more differentiated tissues, even if these functions be so highly developed that they bear little resemblance to those found in the primitive cell. For instance, the excitability of the cell may become so specialised as to be responsive only to certain stimuli, as heat, pain, light, sound, while all its other functions are apparently lost. If one looks at the functions of nerve and muscle cells in the fully-developed state, it seems at first sight difficult to realise that they had originally identical functions. The primitive cells, from which the heart developed, had all the same characteristics both in appearance and in function. That some such modification does occur must be inferred when we witness the change in function that takes place in the evolution of the heart from the primitive cardiac tube. I therefore suggest, as a working hypothesis, that in the evolution of the heart muscle-fibres certain functions of the primitive cell were retained, some of these being more developed than others according to the duties the fibres had to perform, so that while they have come to resemble muscle fibres, they nevertheless retain in a varying degree some functions which are highly specialised in the nerve cell."

To our way of thinking it is not without significance that the author has thrown out this suggestion, which is somewhat on the lines of that held by Wesley Mills and Alexander Morison. A little further modification of these views will make them acceptable to all but the most bigoted neurogenesists. After discussing the five different functions of cardiac muscle, he refers to co-ordination of these functions, to which there is only one objection—that it does not allow sufficient place for the marvellously intricate nervous network of the heart. The following chapter gives an admirable description of the development, morphology, and physiology of the heart, embodying references to all the most important of recent observations—the work of Gaskell, Kent, His, Keith, Tawara, Erlanger, and Lohmann. In this chapter there is, further, a brief but satisfactory account of the nerve supply of the heart, in which we find he regards the whole matter of nerve supply to be something more than what is described in physiological text-books. "There is a great field of evidence," he says, "which is entirely lost to the physiologist, but which is open to the clinician. The personal sensation of the animal cannot be communicated to the experimenter, nor can the changes in sensation that result from stimulation of the cardiac nerves be ascertained. In dealing with the symptoms of heart affections it will be shown that there is unquestionable evidence of a system of nerves passing through the heart to the spinal cord and the bulb. The principles involved in the production of these symptoms have not been thoroughly appreciated, and I shall enter more fully into their explanation when dealing with reflex or protective phenomena."

Mackenzie was undoubtedly the pioneer in the modern study of cardiac pain, indeed of visceral pain of every kind, and we, therefore, turn to the chapter upon Reflex or Protective Phenomena with a high degree of expectation. The key-note of the chapter is found in the reference to Hilton, alongside of whom the author frankly ranges himself in believing that pain has the purpose of protection. The insensitiveness of the viscera to ordinary stimuli, observed well-nigh three hundred years ago by Harvey, and the fact that disturbance of the viscera is often referred to the external body wall far from the seat of the lesion, are held by Mackenzie to confirm, at least in part, Haller's old experiments, by which he showed that animals were indifferent to irritation of the viscera so long as the external body wall was not interfered with. The mechanism by which pain and other reflex phenomena are produced in visceral disease—the viscero-sensory reflex and the viscero-motor reflex—are fully explained, and deserve the most careful study. One of the most interesting parts of this chapter is the explanation from embryology of the reason why pain is so often felt far from the seat of the lesion. The discussion of these matters naturally leads directly to the study of

angina pectoris. Mackenzie places himself with those of us who believe that this symptom may arise as the result of many different lesions, and, in trying to reach an underlying condition common to all these, he is driven to conclude that exhaustion of the heart muscle with impairment of the function of contractility is the esoteric cause. The following chapter is entirely devoted to the clinical features of angina pectoris, and discusses fully the conditions predisposing to an attack, and the factors inducing a seizure. With the conclusions enunciated by the author we are for the most part in hearty agreement. The symptom is rarely indeed the outcome of an acute affection. It is almost invariably produced by a long period of gradual exhaustion. There is one point to which exception must be taken. The author says "that angina pectoris arises only in connection with exhaustion of the left ventricle. The symptoms of angina pectoris are invariably associated with lesions on the ventricular side of the mitral orifice." But angina pectoris affecting the right half of the body has been described by Morison, Mott, and the present writer, in cases in which there was disease of the right side of the heart. We find in this chapter a very full analysis of the distribution and character of the subjective sensations, and of the hyperæsthesia of the cutaneous nerves which results from it. Whether the author accepts the explanation of muscular wasting as described by Eichhorst and G. A. Gibson, with its attendant changes in muscle and tendon responses as well as faradic and galvanic reactions, is not stated, and similarly the appearance of eye symptoms, which have been described by Gibson in this condition, receive no mention. The treatment of angina pectoris is briefly but satisfactorily discussed.

There is an excellent description of those instrumental methods of examination in which the author has shown himself such a master. The position and movements of the heart, and the examination of the arterial pulse then follow. In this, we have a lucid description of the different means of studying the different impulses. The methods of exploration by palpation, by graphic records, and by instrumental measurements are discussed. The paragraphs upon the arterial pressure are probably those to which most serious objection will be taken. The author has apparently not fully studied the series of interesting observations by Recklinghausen and Masing, as well as the important investigations of Howell and Brush: if he had taken their results into consideration, he would certainly not have constructed the diagram on p. 95. In a discussion on arterial pressure at the present time, we have a right to expect the relation of end pressure to lateral pressure, and the difference between systolic and diastolic pressure, to receive more serious consideration than they have obtained at the hands of the author. The results obtained by modern instruments, based upon the method of circular compression, have been care-

fully compared in the physiological laboratory, with the readings furnished by the kymograph, and they furnish absolute proof of the accuracy of our modern instruments.

As might be expected, Mackenzie is admirable in his analysis of the appearances presented by the venous pulse, and Chapter XIII. of this work is worthy of the most careful perusal. We find the most recent work, such as that of A. G. Gibson and A. D. Hirschfelder, discussed, while the changes which ensue during interference with the muscular functions of the heart when the auricular type of venous pulse passes into the ventricular are fully discussed. Many years ago, Friedreich described the changes of the venous pulse which occur when paralysis of the auricle supervenes. We have, mainly through the labours of Mackenzie, gone far beyond what was then known, and there can be little doubt of the correctness of the following statement made by Mackenzie: —*The ventricular venous pulse is an evidence of the starting of the rhythm of the heart at some place other than at the mouth of the veins.*

The appearance presented by the liver in cardiac disease, increased frequency of the heart's action, diminished frequency of the heart's action, and arhythmic action of the heart in general, lead to a discussion of irregularities produced by changes at the auricular sinus, and this section is followed by a full discussion of the extra systole. "Nodal rhythm," or that action of the heart where the auricles and the ventricles of the heart contract simultaneously, or where, as is so frequently the case, the ventricular action slightly precedes the auricular, is shown by Mackenzie to be present in a large number of cases of severe heart failure. In this section, the teaching of McWilliam receives full consideration. It is probably true that the majority of cases of paroxysmal tachycardia manifests the "nodal rhythm," but there are still some difficulties in accepting this as an absolute conclusion.

In the chapter devoted to affections of the conducting functions of the primitive cardiac tissue, such as heart-block leading to the Adams-Stokes syndrome, and the ventricular rhythm, the author is admirable. It would have been advisable in this connection to have discussed the possibility of a sinus wave in the venous tracing, and to have referred to the effects of atropine on the auricle and ventricle respectively, as these subjects have been so much under discussion in recent years. There is much originality in the chapters devoted to valvular defects, more especially as regards the tricuspid orifice. In the remarks on tricuspid obstruction (p. 230, qualified by p. 130) it is interesting to observe that Mackenzie does not now lay quite so much stress upon the auricular liver pulse, as absolute evidence of this lesion, as he used to do. The chapters upon Prognosis and Treatment are characterised by wise restraint, and they are, from every point of view, admirable. His strictures upon the Nauheim treatment are very well merited.

This review has already exceeded ordinary limits, but there are still many points to which we would like to have referred. Space, however, forbids this, and these remarks must be brought to an end. In concluding them we desire to express our profound sense of the value of the work as a whole. As has been indicated, we do not see eye to eye on every point with its brilliant author, but we wish to express our unstinted admiration for the result of his labours. For real originality of view, and earnest search after truth, it has no equal on its subject in our language.

NOTES ON BOOKS.

The third volume (19th series, 1909) of *International Clinics* (Lippincott) maintains the reputation of this publication for providing a series of short practical papers on subjects of immediate interest to the profession. Eighteen of twenty-three contributions in this issue are from the pens of American writers, four are French, and one Canadian.

A new edition—the fifth—of *Pye's Surgical Handicraft* (John Wright & Sons, Ltd.) has been revised and largely rewritten by Mr. W. H. Clayton-Greene. The original plan of the work has been adhered to, and all the more important advances in surgical procedure have been incorporated. The treatment of fractures and other injuries by massage, the use of the X-rays for various purposes, the different means for investigating the bladder and ureters are all adequately dealt with, but we think that Bier's method of treating inflammatory conditions might have received more attention. We can renew our recommendation of this work as an excellent house-surgeon's *vade-mecum*.

The seventh volume, 1909, of the *Practical Medicine Series* (the Year-Book Publishers, Chicago) is devoted to Pediatrics and Orthopædic Surgery. Drs. Isaac A. Abt and John Ridlon are respectively responsible for these sections, and they have given a short yet comprehensive analysis of the current literature of the year on the several subjects.

The eighth volume of the *Practical Medicine Series* (G. Gillies & Co.) deals with Materia Medica and Therapeutics, Preventive Medicine and Climatology. The matter consists of abstracts of articles which have appeared for the most part during 1908 and the early part of 1909. As is natural, much of the literature is of American origin, but a place is found for the leading Continental journals. The different remedial agents in the portion on Materia Medica are arranged in alphabetical order, and prominence is given to the consideration of sero-therapeutics, vaccines, and X-ray therapy.

The abstracts are given without editorial criticism. The type is large and clear. The volume should be useful to the busy practitioner, for whom it is evidently intended.

The ninth volume of the same publication is devoted to Skin and Venereal Diseases, and to various topics of general interest. All the important papers on these subjects, which have appeared in 1909, have been summarised with that care and discrimination which characterise this most useful year-book of medical progress.

Each succeeding volume of the *Transactions of the American Surgical Association* indicates the high-water mark of American surgery. The twenty-seventh (1909) is no exception to the rule, and the collection of papers now before us attests the high standard reached by the surgeons of the American continent. Where all is so good it would be invidious to single out particular papers for comment, but we may be permitted to congratulate the editor, Dr. Richard H. Harte, on the admirably succinct summaries of the discussion which followed the reading of each paper, and which add enormously to the value of the *Transactions.*

The *Philadelphia General Hospital Reports* (Vol. VII. 1908), edited by Herman B. Allyn, M.D., in addition to reports of some of the departments, contains no fewer than thirty-six articles, most of them being clinical records. Statistical reports are given on fractures of the jaws, erysipelas, and lobar pneumonia. W. G. Spiller contributes a paper on the "Symptom-complex of Occlusion of the Posterior Inferior Cerebellar Artery," based on two cases with necropsy.

Dr. Byron Robinson, in his work on *The Arteries of the Gastro-Intestinal Tract with Inosculation Circle* (Chicago Medical Book Co.), gives an elaborate description of the vessels of the abdomen, designed to show that they are arranged in a series of "inosculation centres" the object of which is to engorge its peripheral veins and to transport blood volume from one viscus to another. The reader will find various practical applications of this theory suggested and supported by arguments more or less cogent.

We have received the 1910 edition of *Nisbet's Medical Directory*, which, at the moderate cost of 7s. 6d. nett, furnishes a complete and accurate list of members of the medical profession arranged alphabetically, together with their qualifications, appointments, and more important published writings. A very useful feature is the Local Directory, which gives a list of medical practitioners resident in each town.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES AND NEWS.

Honours to Emeritus-Professor John Chiene, C.B.

We offer our congratulations to Mr. Chiene on the honour which the Senatus Academicus proposes to confer upon him at the forthcoming graduation. The pioneer work which he did in the days when the antiseptic system had to make its way against prejudice and scepticism, his numerous contributions to the literature and practice of Surgery, and his wholesome influence on the teaching of Surgery in Edinburgh during more than a quarter of a century, entitle him to the highest honour the University can bestow.

The proposal which is on foot, to present Mr. Chiene with his portrait, is only another evidence of the esteem and affection in which he is held by his many friends in the medical profession and out of it. For the benefit of any of our readers who have not had an opportunity of taking part in this testimonial, and who may desire to do so, we may mention that the Honorary Treasurer of the fund is Mr. L. A. Guthrie, W.S., 1 North Charlotte Street, Edinburgh.

The Apotheosis of the Gymnastic Instructor.

The spirited and whole-hearted, yet judicial advocacy of athletics as an essential part of school life, with which Dr. Burn-Murdoch introduced a discussion on "The Use and Possible Abuse of Athletics During the Period of Growth and Development" at a recent meeting of the Medico-Chirurgical Society, raised an enthusiasm which proved highly infectious, and led to a free, if not always well-balanced consideration of the subject. The opening paper and a short résumé of the remarks made by subsequent speakers will be found at p. 391.

The discussion brought out more prominently than is generally appreciated the importance which educational authorities and the medical officers of large schools attach to physical exercises as a preparation for the playing of such games as football and cricket, and the desirability of bringing boys into a condition of "fitness" by systematised exercises before allowing them to take part in ordinary school games.

A plea made for allowing young boys to obtain the amount and kind of exercise they require by "playing," in the ordinary sense of

the word, received less support than it seemed to deserve, and it was impossible to avoid the feeling that in the enforcement of modern methods of physical culture, with their systems and appliances, we are apt to lose the distinction between exercise and recreation.

The value of gymnastics as a means of exercise has long been recognised, and this form of amusement has always been popular among healthy boys. With the head master of Merchiston we cannot but regret that the older forms of gymnastics, such as the horizontal and parallel bars, the rings, and the trapeze, are gradually being ousted by the more modern "systems" of muscle training either without apparatus or with uninteresting mechanical appliances. These may be as efficacious in developing the muscles and building up a healthy, well-proportioned body, but, in the language of the schoolboy, they are not nearly such good fun—and it is fun the boy is out for. He is less concerned with the physiological effects of his exercises than with the pleasure he derives from their performance and the skill he shows in emulating and surpassing his fellows. We would not attach undue importance to personal brilliance or pre-eminence in school sports, but we are not convinced that the competitive element should be so rigorously excluded, even from gymnastics, as some of the speakers seemed to desire. Nor can we see the advantage of setting boys to run against time instead of competing with their fellows to win a race.

It appears to us that the maximum amount of physical, intellectual, and moral good will be derived from exercises and games in which the boys take a real interest, and particularly from games of combination in which the "side" rather than the individual is the winner. An instructive object-lesson in this was mentioned by one of the speakers. In the school of which he is medical officer, to meet the preference of the boys Association was substituted for Rugby football, with the result that the boys not only played the game with more zest, but derived greater physical benefit from it.

Nothing was more convincing than the evidence alike of head-masters, school medical officers, and practitioners, that, if the most obvious elementary precautions are taken, no ill-effects follow the use of gymnastics and games as practised in a well-regulated school. On the contrary, in every respect the boys benefit, and it is often those who are sent up labelled "weakly," "delicate," or "backward" who most speedily show the advantages of athletics when properly regulated to their capacities.

The warning of the head master of Cargilfield that young boys should not be so highly trained as their seniors—should be allowed to "run soft" as he happily phrased it—was well timed; and the importance of regulating the amount and kind of exercise taken by rapidly growing boys was very properly insisted upon by several speakers.

All were agreed on the evils of "athleticism" as distinguished from athletics, but we cannot agree with those who excused the excessive interest which boys take in athletic literature on the ground that "the natural instinct of most boys was not to appreciate finer literature, and that, if they were not occupied with accounts of athletics, they might be reading something worse." Why not something better? If our modern educational system is not capable of instilling into boys a taste for literature finer than that found in the athletic columns of our evening newspapers, we fear it must be written down a failure. That the instructor of gymnastics fills a most important and useful place in the modern school is undoubted, but it is surely to lose the sense of proportion to claim, as was done in the discussion, that he is as important as the teacher of classics or mathematics.

The opener of the discussion, appositely to his argument, quoted Herbert Spencer's dictum that "the first requisite to success in life is to be a good animal." The first requisite admittedly, but not the only one. There are few better "animals" than the prize fighter or the professional wrestler, but their success in life is not what our head masters set before their boys as a model. By all means let us have the healthy body, but we must not let our professional zeal for that ideal lead us to relegate to too subordinate a place the development of the healthy mind to govern it.

Medical Reform.

If it be true, as is frequently averred, that the undertaking of missionary enterprise is a sign of health in the parent Church, we may, by analogy, congratulate the Edinburgh Medical School on its sanity. It appears that the movement for reform in medical education, at present going on in Edinburgh, is being developed by the teachers whom Edinburgh is sending out to other centres, where also things are "maybe waur than weel." Thus considerable attention has been attracted by "A Review and Some Suggestions for the Improvement of the Efficiency of the School of Surgery of the Royal College of Surgeons in Ireland," by Professor Campbell Geddes, who, since taking up his duties in Dublin, has been appointed Dean of the Schools of Surgery there. In this paper the author first of all discusses in a very able and weighty manner what ought to be the general aims of medical education, and then proceeds to sketch how the years of study may be best utilised in preparing a man so that he may keep abreast of the developments of medical science, which are bound to take place while he is in active practice. This, after all, is the true test of the success of a medical training, for there is nothing so pathetic as to meet a man ten or fifteen years after his graduation and find him in knowledge and outlook what he was at the commencement of his career. Professor Geddes summarises the aims of a medical education as follows:—

To teach a man to observe; to strengthen his powers of thought and deduction; to give him a broad outlook on the science of life; to teach him the actual details of the treatment of injuries and emergencies and the common ailments; to teach him how to use books —the common memory of the profession. We feel very strongly that this insistence on the strictly educational side of the curriculum is sound. The difference between a well-equipped man with a knowledge of the fundamental facts of his profession, and one who for five years has been crammed with knowledge only partly useful and permanent, is the difference between a mathematician and a calculating machine. The difficulty of the shortness of the medical curriculum is, of course, clamant, and Professor Geddes gets over this by insisting on the necessity of co-ordination between subjects, and of taking in each subject useful facts to illustrate scientific principles. The feature of the practical part of Professor Geddes's scheme is that in the earlier years, while the student is developing mentally, he shall have the advantage of greater personal supervision by his teacher and frequent simple examinations; but the keynote of the whole lies in the insistence on co-ordination between subjects. We may differ from Professor Geddes as to the means by which this is to be attained. He would have a central officer endowed with executive powers. We would suggest that the successful school of the future will be one where the co-operation is voluntary—where "none are for the party but all are for the State." Professor Geddes's paper illustrates this. He has been criticised in some quarters and advised to stick to his last. On the contrary, we consider his contribution to the cause of medical reform wholly praiseworthy. It will only be when each teacher tries to make himself acquainted with the requirements of subjects cognate to his own specialty that the modern problems of medical education will be successfully solved.

Deaths from Anæsthetics.

THE committee appointed by Mr. H. J. Gladstone, while he was Home Secretary in 1908, has issued a report on the question of deaths resulting from the administration of anæsthetics. The committee of five included two members of the medical profession—Sir Malcolm Morris and Dr. Wm. H. Willcox. The medical witnesses examined appear to have been drawn entirely from London hospitals, so that the conclusions arrived at, so far as they were influenced by the evidence, will only reflect that section of medical opinion. We feel that the views of experts in other parts of the country, and particularly in Scotland, where anæsthesia has not been neglected, might have been obtained. They would probably have been at least as useful as those of the representatives of the Incorporated Society of Extractors and Adaptors of Teeth, Limited, whose evidence was taken. Sir Donald MacAlister gave the com-

mittee the views of the General Medical Council with reference to the teaching of anæsthetic administration.

The statistics of deaths under anæsthetics for the forty years from 1866 to 1905, taken from the reports of the Registrar-General, show that they rose from 5 in 1866 to 155 in 1905. The committee point out that no absolute deductions can be drawn from these figures, because there is no duty imposed on anyone to report a death under anæsthetics, and there does not seem to be any distinction drawn "between death *from* an anæsthetic and death *under* an anæsthetic," a distinction which, if made, we feel sure, would materially affect the figures. Unfortunately it is impossible to obtain statistics to show the ratio between the number of administrations and the number of deaths under anæsthetics. If such information were forthcoming there can be little doubt that the proportion of fatalities would be surprisingly low, and that the gradually increasing number of deaths would be more than accounted for by the enormously increased use of the drugs. And if the number of lives saved by operations rendered possible only by the use of anæsthesia could be placed against the deaths attributable to the anæsthetics, we are confident the latter figure would appear insignificant. As the committee admit, "a certain number of deaths are inevitable whatever the care and skill may be with which the anæsthetic is administered."

The committee are of opinion that every death under an anæsthetic should be reported to the coroner, but that the coroner should not in every case be bound to hold an inquest. We would go the length of saying that if there were fewer inquests there would be fewer deaths. The constant dread of a public inquiry, should anything go wrong, renders many a man nervous while administering a general anæsthetic, and it is common knowledge that it is the timid administrator who meets with accidents. Further, in certain districts, the choice of the anæsthetic is often determined more by the known views of coroners and their juries as to the relative safety of different drugs than by the requirements of the individual patient.

It is in the interests of the public and from no selfish professional motive, that we support the committee in their recommendation—"That it should be made a criminal offence for any person to administer anæsthetics who has not professional qualifications or is not acting under the personal supervision of a person so qualified," and that intra-spinal anæsthesia should be practised only by registered medical practitioners.

Whether duly qualified and registered dentists should be as rigorously confined to the use of nitrous oxide gas as the committee propose may be open to discussion, but there can be no doubt that the same man should not administer the anæsthetic, whatever it is, and perform the operation. In his own interest, as well as in the

patient's, the dentist will be well advised to have a medical man present when such anæsthetics as chloroform, ether, or ethyl chloride are employed.

While fully recognising the danger which frequently attends the use of cocaine and its analogues as a local anæsthetic, the committee are of opinion that no restrictions on their use are practicable or desirable.

We have on previous occasions expressed our views on the teaching of anæsthetics, and we need not here discuss the committee's findings on this matter. The practice of our own school is already considerably in advance of their proposals.

That much yet remains to be learned about anæsthetics and their administration we cordially agree, but we do not hope for much enlightenment from the Standing Committee on Anæsthetics under the authority of the Home Office, which the committee suggests should be appointed, to collect information from all sources, and to digest it when collected; to report on advances made by the discovery of new anæsthetics, or by improved methods of administration; to direct researches for testing new discoveries; and to make their information available to the medical profession. Existing agencies are quite equal to these duties, and are likely to be more expeditious and independent than a committee encircled by the red tape of Whitehall.

Voluntary Aid Detachments Territorial Army.

In connection with the Territorial Army, we understand that steps are about to be taken to form Voluntary Aid Detachments to deal with the sick and injured in the area between the base and the field hospitals, known as the "evacuation zone." In actual war nothing is of more surgical importance than that the transport of the injured between these two points should be carried out with the minimum of delay, and the minimum of injury and suffering to the men. Schemes for improvising ambulances on rail or road, and for the provision of "rest-houses," have to be devised, and the necessary personnel has to be trained to this special form of ambulance work.

The organisation will be carried out under the County Associations, and will be under the immediate control of a County Director. For the County of Edinburgh, this post has been accepted by Colonel Arnott, late I.M.S., and an influential committee has been formed to aid in the work. It is hoped to form several detachments, at least one of which will be formed of ladies. They will be composed of those who hold a certificate from either the Red Cross Society or the St. Andrews Ambulance Association, and will be officered by members of the medical profession.

Colonel Arnott has also undertaken the same work in the County of Midlothian, where he intends to form detachments, or portions of detachments, in all the centres of population.

THE USE AND POSSIBLE ABUSE OF ATHLETICS DURING THE PERIOD OF GROWTH AND DEVELOPMENT.[1]

(*WITH DISCUSSION.*)

By THOMAS M. BURN-MURDOCH, M.B., F.R.C.P.,
Medical Officer, Merchiston Castle School, and Ministers' Daughters' College, Edinburgh.

MR. PRESIDENT AND FELLOWS.—When your council asked me to open this discussion my inclination was to decline the honour, chiefly because it then appeared to me that the subject had already been fully discussed and that the medical profession had expressed its opinion upon it.

The Secretary, however, told me that your Council thought otherwise, and, since going more fully into the matter, there does appear to me to be warrant for the discussion I have the pleasure of introducing to-night.

Further, during the past year public attention has been directed to the use, or, rather, the abuse, of athletics. Meetings and discussions have been held by experts on the subject, and their decisions published; but the conclusions arrived at have, perhaps, hardly permeated to the rank and file of our profession, much less to the minds of the public.

At this date it seems almost superfluous to vindicate the use of athletics. An all-round development is the requisite. Improvement in chest capacity, of so vital importance to heart and lungs, is the result of properly regulated exercises. Proper co-ordination of movement is another benefit derived from athletics generally.

Anyone accustomed to handle large numbers of boys or girls cannot fail to be struck with the marked change for the better on frames normally, deficiently, and defectively developed under active exercise. Pigeon-breast, hollow breast, drooping shoulders, stooping, and lateral curvature of the spine disappear. Marked increase in height in stunted boys and lads not infrequently starts when systematic exercise is taken. Limbs so deficient in muscle as even to have caused parents anxiety fill up, and the whole aspect of the individual changes.

I have seen boys, veritable weeds on entering school, who in a

[1] Medico-Chirurgical Society, Edinburgh, 2nd March 1910.

few years became such powerful lads, with fine chests and shapely limbs, that I have failed to recognise them as the weaklings for whom I had, at their first examination, been obliged to forbid the harder forms of even developmental exercises, all school sports, ordinary gymnastics, and runs.

Marked improvement in asthmatics is common, and surprising results have been noted, even in organic heart mischief, with the attainment of finer chest development. *The importance of regulated gymnastics along with more strenuous athletic exercises cannot be overestimated, and should always be attended to at school.*

Some years ago Mr. Cathcart made minute inquiries into this subject. He sent a series of ten questions to eighty of the leading English and Scottish schools. They related to the use and abuse of athletics—football, cricket, rowing, lawn tennis, gymnastics, skylarking and playing no organised games. About thirty of the replies were full and really useful. They were practically unanimous in voicing the immense value of athletics. As Mr. Cathcart intends giving some results of his investigations, I need not dwell on this.

I cannot here refrain from quoting from M'Laren of Oxford's Essay on "Growth and Development," prefacing his book on *Physical Education*. He says, "Many years ago I instituted a series of measurements by which I could ascertain the state of the development of all pupils at the commencement of instruction . . . and the rate of their advancement. I find that to all, child or adult, weak or strong, a proper system of exercises gives an impetus, a momentum in the development of his resources, which nothing else can give, . . . and I cannot do better than give the instance of those soldiers who first received a course of training on this system.

"The first detachment of non-commissioned officers, twelve in number, sent to qualify as instructors for the Army were selected from all branches of the service. They ranged between nineteen and twenty-nine years of age, from five feet five inches to six feet in height, nine stone two pounds to twelve stone six pounds in weight, and had seen from two to twelve years' service. I confess I felt greatly discomfited at the appearance of this detachment, so different in every physical attribute, and perceived the very great difficulty of working them in the same squad at the same exercises. But I also saw that the detachment presented perhaps as fair a sample of the Army as it was possible to obtain in the same number of men, and that if I closely observed the results of the

system upon these men, the weak, the strong, the short, the tall, the robust, and the delicate, I should be furnished with a fair idea of what would be the results of the system upon the Army at large.

"The muscular additions to the arms and shoulders and the expansion of the chest were so great as to have absolutely a ludicrous and embarrassing result. In the fourth month several of the men could not get into their uniforms without assistance, and when they had got them on they could not get them to meet down the middle by a hand's breadth. In a month more they could not get into them at all, and new clothing had to be procured. One of these men had gained five inches of actual girth of chest. Now, who shall tell the value of these five inches of chest, of additional space for the heart and lungs to work in? There is no computing its value, and before such an addition as this could be made to this part of the body, the whole frame must have received a proportionate gain. For the exercises of the system are addressed to the whole body, and to the whole body equally, and before this addition could be made to the chest every spot and point of the frame must have been improved also—every organ within the body must have been proportionately strengthened.

. . . . . .

"But there was one change—the greatest change of all—and that was the change in bodily activity, dexterity, presence of mind, and endurance of fatigue; a change a hundredfold more impressive than anything the tape measure or the weighing chair can ever reveal."

Immense changes for the better have taken place in all schools since M'Laren wrote. They have permeated to girls' schools, and it is satisfactory to note the agreement of head masters and mistresses on the great benefit derived from athletics. The pioneer both in Scotland and England was undoubtedly Dr. Almond of Loretto. I should here also mention the name of the late Dr. Rogerson, of Merchiston Castle, as that of another pioneer. These two men have, I believe, done more than any others for the advancement of school athletics.

Dr. Heard, of Fettes College, summed up his remarks endorsing the immense value of athletic exercises by saying that "the general outcome of the present arrangement of athletics in Scotland is quite excellent." Mr. Cotterill agreed with him.

Mr. Smith, of Loretto, Dr. Thomson, the School Medical Officer, Mr. Smith, of Merchiston, and myself are in full accord with Dr.

Heard's opinion, and all feel that it would be impossible to run a school with any hope of success without the full development of its athletic side.

I should have liked to quote more fully from an able pamphlet, "The Cultivation of the Body from Work and Play in Girls' Schools, 1902," by Misses Beale, Soulsby, and Dove, three head mistresses, but I must confine myself to a few sentences. They speak strongly of the deficiency of early muscular training in girls, and for this reason lay great stress upon the necessity for gymnastic training being given before severe games are indulged in. They say, "We do not believe it safe to allow girls to indulge in them absolutely without restriction, nor at all, at least in the severer games, unless they are receiving systematic muscular training in the gymnasium, and make a practice of changing all their garments as soon as play is over. *Also no exemptions whatever are given from gymnastic lessons.* By this means hard games are made safe, whereas otherwise there would be constant danger of overstrain and other mischief."

Miss Shermanson, who for twenty years has had charge of the gymnasium at St. Leonards, St. Andrews—Miss Dove's old school—writes that "no girl has ever hurt or strained herself in any way in the gymnasium or during games. The girls love their drill. They do not try to get out of it. . . . Such exercises help discipline in a school and make a child obey orders instantly." No girls are allowed to do gymnastics or play games during menstruation.

Miss Robertson, Lady Principal of the Ministers' Daughters' College, who was formerly at St. Leonards, and represents a hard-working school, gaining excellent reports from leaving certificate examiners, said she "could not conceive a girls' school without organised gymnastics and games." At St. Leonards and the Ministers' Daughters' College she had noted no evil consequences, but all good.

This college is under my own care, and we have there a highly-trained resident gymnastic mistress. All girls are examined medically on entrance.

It is surprising to find how many pupils have malformed chests and lateral curvature of the spine. For these defects they get special exercises, and the results of treatment are excellent. Since the introduction of a correct system of physical education, the improvement in the appearance of the girls as a whole has been most marked. Their carriage and vigour have visibly improved,

and anæmia, which in former years frequently required treatment, is now almost unknown.

With reference to the *Intellectual Advantages of Athletics*, one recalls the perfection of Greek culture and physical development; and to-day it is noticeable how many of our greatest men have been and are athletes. Coming nearer home, how many men have adorned and still adorn our own profession who have excelled in athletics? The very qualities essential to success in sport and fostered by athletics are those which help towards the attainment of success in life.

Time does not permit me to linger here, but I cannot help mentioning the fact that there are in this room to-night several international football men, not to speak of others, our President included, who have excelled in cricket and other forms of athletic sports.

I shall allude later to Dr. Morgan's book, *University Oars*, but it is interesting to note, whilst talking of intellectuality, that he found the Oxford and Cambridge oarsmen had the advantage intellectually, both as to number of honours gained, and still more so in their importance, over those who had not rowed for their universities. From 1829 to 1869 the average of classmen from all undergraduates was 31 per cent.; amongst cricketers, 42 per cent.; whilst among rowing men it rose to 45 per cent. "Nay, the very élite of the university are more often found among the college eight than among any other section of the community."

Several head masters and medical officers of schools to whom I have spoken concur in the opinion that their best boys intellectually are frequently those who excel in manly exercises and are well developed both in mind and body.

Moral Uses.—Here we are on firm ground. The development of character, unselfishness, co-operation with others, and endurance are of untold value. The lad who shows grit enough to play a good game of football, to practise for a race, to go through his school runs, to play cricket—especially to field well—promises in after-life to have perseverance, energy, and the power of sticking to work which tend to success and often atone for want of exceptional brilliancy.

Dr. Kelman, who has always taken a keen interest in university athletics, authorises me to say that he is convinced of the enormous power for good that many leading athletic men exert in the university here.

Purity in school life is the prime object one should aim at;

for there is no use shirking the fact that boys want careful watching and guiding here. Without all the various forms of athletics it would be an impossible task to keep the tone of a school pure. Certainly parents do not, and I doubt if the majority of medical men realise this sufficiently. The subject is unsavoury and apt to be shirked, but bad habits are less likely to gain ground in a school where athletics are cultivated than where they are neglected. A few accidents or overstrains are nothing compared to broken-down morals, weakened will, and distorted intellect.

Head masters and medical officers of schools are here unanimous. Dr. Almond was most strong about this. Dr. Heard and Mr. Cotterill were emphatic as to the value of athletics in forming, keeping up and handing down a tradition of good moral tone and purity. Mr. Smith and Dr. Thomson, of Loretto, stated that "the moral tone of the school is improved and upheld by physical development and the athletic system, and the tone is higher amongst boys who can make full use of athletics than amongst those who from physical incapacity are unable to do so." Dr. Thomson thought the "weedy" boys were worst in the direction of loose morals. Mr. Smith, of Merchiston, said, "Athletics are of extreme importance in upholding moral tone, and he himself could not undertake to run a school without them."

With these opinions I concur. Whilst aware that athletic boys may have bad habits, they are, in my judgment, exceptional. It has not been from the ranks of the manly athletic boys that suspects have been brought to me, but from those who have not been able to enter fully into the athletic life of the school. Further, the high tone and purity fostered by manly exercises are in any school a powerful preventive against the entrance of evil. Public schools are by some thought dangerous, from the moral point of view. My personal knowledge is chiefly derived from schools in Scotland, and from such experience I have learned that this idea is erroneous. Many of the worst offenders I have known have contracted bad habits before going to big schools, or even to any school.

The difficulty of dealing with boys unable to take part in athletics is very real; this even under modern circumstances, where laboratories, workshops, photographic rooms, and libraries are provided.

Mr. Smith, of Merchiston, writes trenchantly on this point:—"Broadly I may say that they are not welcome at school, and I am a little doubtful whether a public school is the proper place

for them." And, again—"The slacking of such boys is an example and suggestion not very good for the rest of the boys."

Before passing on to "Possible Abuse of Athletics" I may quote Herbert Spencer's dictum—"The first requisite to success in life is to be a good animal, and to be a nation of good animals is the first condition of national prosperity." Also from Dr. Beddoe, in his book *The Stature and Bulk of Man in the British Isles*, where he says—"If we examine only a single race at a time, we shall find that whenever that race attains its maximum of physical development it rises highest in energy and moral vigour."

Possible Abuse of Athletics.

By Accidental Physical Damage.—Damage by accidents must at once be admitted. From returns received by Mr. Cathcart in the Report already alluded to, it appeared that at football 1 fracture occurred in 760 players; 1 dislocation or sprain in 373; 1 other injury in 1175; or on an average 1 injury in 206 players.

In skylarking and unorganised games, 1 fracture occurred in 2611 boys; 1 dislocation or sprain in 1958; 1 other injury in 2136; or 1 injury in 740 boys.

It is, however, only fair to remember that such accidents occurred during irregular play, when it was kept at a minimum, and that a far larger number must have happened if systematised exercises and games had not largely occupied the boys' time. Many head masters note that "athletic exercises cause fewer accidents than skylarking."

Since the Report was instituted improvements and reforms have been effected in the nature and management of athletics, with the result that head masters and medical officers of schools are to-day not alarmed by the question of accidents. Such must always occur in any form of sport. The great majority of school accidents are not of an alarming nature.

Time does not permit me to quote statistics and opinions received, but the gist of all is the same. Personally, in a long experience I have known of only one accident of a serious nature which spoilt a boy's life, and it was due to want of proper classification of players.

A head master writes:—"As regards the prevention of such accidents, there is a great deal done already. Careful grading of boys, partly according to their age, but mainly according to

their actual physical powers as determined by weight, muscular strength, and known energy—such grading prevents, I have no doubt, many dangerous accidents which might occur from small or weak boys playing with a team of big and strong ones."

Overstrain.—This danger is, I believe, also much overestimated, though it can and does occur, particularly where proper preparation of boys' and girls' physique has not been attended to or where due regard has not been paid to regulation of athletics. Dr. Heard told me he had known of two boys strained by mile racing, but, with these exceptions, no case had been known to him at Fettes. Mr. Cotterill concurred, as also did the Loretto authorities. Mr. Smith, of Merchiston, writes:—"There is comparatively little danger, though there may be a little, of any boy at any school that is of any worth whatever doing himself physical harm by overmuch indulgence in athletic exercises."

I feel confident that if reasonable precautions are taken, such as those followed at the schools mentioned, there is a minimum risk of overstrain.

Dr. Armstrong, of Wellington College, says that during the twenty-five years he has been there 3000 boys have passed through his hands and nothing but good has come out of the sports properly regulated.

The public mind was perturbed recently by a manifesto published in the *Times* of 8th January 1909, signed by some leading medical men, dealing with one aspect of school athletics "long racing." The matter was at once taken up by the Medical Officers of Schools Association, who issued a circular—"The Schoolboy Athlete"—to public schools, asking for information.

A meeting was held on 10th March 1909 to consider replies, and many prominent men took part in it. Thirty-eight reports from residential schools were received.

To Question "Were any ill effects observed?" two returns noted ill effects in certain instances.

To Question "Do you know of any permanent damage?" twenty-nine medical officers did not know of any. Nine mentioned damage where boys had been allowed to compete without previous medical examination.

Questions 5, 6, and 7 referred to long-distance runs—up to 13 miles. Out of thirty-three returns, six medical officers had known of ill effects. ". . . boys come in very exhausted and suffering from heart strain, distress due to over-exhaustion after a 5-mile race, over-exhaustion due to loss of way, or when a boy has not been previously examined and was unfit to run."

Question 9 was, "Have you observed damage to heart or lungs caused by over-exertion in school races or other forms of athletic exercise in lads who have left school?" Thirty-one medical officers reported none. Seven report some cases. These include some which took place many years ago, before medical supervision was instituted; later ones also due to this cause; whilst others are attributed to over-exertion by rowing, &c., after the boy has left school.

Various resolutions were submitted to, and approved by the meeting, and are referred to later on in recommendations against possible abuse. The last resolution ran:—"Finally, the Association believes that the application of intelligent supervision and individual observation by masters and medical officers, such as is now carried out in one way or another at our public schools, in relation to most forms of active exercise, is most necessary as a recognised routine, and that, so practised, it reduces the risk of strenuous sport to an insignificant minimum."

The *British Medical Journal* (13th February 1909), commenting on this, says:—"The healthy boy is far less likely to push himself to the extreme of exhaustion than the man—he is in better training than the city week-end athlete, who is handicapped by long hours and indulgence in tobacco. There is very little definite proof that permanent cardiac trouble is produced by over-indulgence in athletics *per se*. . . . We fail to see any reason for stopping boys running cross-country races so long as they are fit to enjoy it and the distances are of moderate length. . . . *The training and development of the boys' physique should be as important a part of the schoolmaster's charge as the training of mind and character.* Boys should be taught to run, not to win or break records, but to improve their physique and increase their enjoyment of life."

Some interesting letters followed, mostly in favour of athletics. Dr. Watson Williams, writing from Clifton, where he was in charge of 650 boys, stated that his experience was diametrically opposed to that of Sir Lauder Brunton and his colleagues, and that he had never once come across a boy who, after he had certified him fit to run, was any the worse even for the long cup race of about 9 miles.

He suggested a discussion at the British Medical Association meeting to be held in Belfast in July of the past year. This took place, and its findings were published in the *British Medical Journal*, 25th September 1909. Arguments for and against cross-

country races were heard. One is not surprised there to read Dr. Duke's damaging statements on the evil effects of such running, knowing that until quite recently compulsory, methodised physical education in addition to severer athletic exercises was not the rule at Rugby. The overstrains he recorded ought never to have occurred.

Finally, the following resolution was formulated:—"That the medical section of the British Medical Association meeting at Belfast desires to suggest to the Central Council that they should take into their consideration the question of securing a professional announcement as to the most suitable manner in which athleticism in schools may be so organised and controlled as to achieve the maximum of benefit and to reduce to a minimum any risk of harm to the individual schoolboy."

I here frankly admit the "possible abuse of athletics," and that cases of overstrain have arisen, but wish to assert emphatically that they should not have occurred under effective control.

I have already spoken of Dr. Morgan, and, as he was referred to at the British Medical meeting as an authority on rowing, have gone carefully through his book on *University Oars*, published in 1873. It is still the standard work on the subject.

I must quote very curtly Morgan's work, which originated from a letter written by Mr. Skey to the *Times* in 1867, in which he condemned rowing on account of the damage it produced on the constitution. It covered the Oxford and Cambridge Inter-University Rowing Records from 1829 to 1869, and was an inquiry of great difficulty, lasting four years, as it had to be exhaustive to be of any real value.

That it was exhaustive is proved by the fact that out of 255 oars alive at the end of 1869, Morgan had letters from 251 and had heard of the remaining 4. He chronologically arranged the races and considered the life expectation of the oarsmen. His statistics were all calculated to dispel Skey's gloomy forebodings. If any harm accrued, that harm could be accounted for by constitutional unsoundness or deviation from laws of health and prudence.

Calculating on the lines of Dr. Farr's *English Life Tables*, he found that the ordinary expectation of life of the oarsmen rowing in 1829 had been markedly exceeded. The best crew was one in 1840, whose "oars" were all alive in 1869.

"The results obtained by the *Life Tables*, in so far as they bear on duration of life, are decidedly favourable to the rowing man."

Effect on Mental Work.—Everyone I have spoken to on this subject agrees that any interference with mental work is transient, and ought not to occur appreciably in adolescence under proper management. School matches and runs were arranged for holidays and half-holidays, so as not to interfere with school work. Some said boys work distinctly better on Monday.

Effect on Character and Intellectuality.—Mr. Smith, of Merchiston, says: "Evils of athleticism are mainly intellectual, and athleticism in this case does not mean actual participation in athletics, but a parasitic and unhealthy interest in other people's athletics. . . . The more important evil is, that, for many boys, interest in athletics takes up far too much of their mental energy. It is natural and inevitable, and probably justifiable, that they should be interested in their school teams. That is a certain aspect of corporate spirit, and if it were not for that aspect of it, there would be no justification for a schoolmaster allowing his school to look on at matches. But it is unnatural and morbid when this interest extends to all manner of football everywhere. . . .

"So far as schools are concerned, it would be a very good thing if we could induce the evening papers, and the other papers as well, to pay no attention to us, and not to mind reporting the account of our matches. . . . I cannot find any good feature in that activity of the evening papers, save that the old boys in other cities learn how their school is doing."

With this Dr. Heard agreed. Mr. Smith and Dr. Thomson, of Loretto, in addition, remarked that "the natural instinct of most boys was not to appreciate finer literature, and that, if they were not occupied with accounts of athletics, they might be reading something worse."

Attitude of Parents and Practitioners.—This is a delicate subject, but upon it head masters and mistresses are agreed. They have to consider the well-being of *all* the pupils under their care. Most parents, on the other hand, are concerned with the care of their own offspring, and too frequently desire that their children should be exempted from various forms of athletics.

Unfortunately their wishes are too often backed up by letters from their medical men. Many of these would, I feel sure, not have been penned had the writers realised the difficulty of ensuring proper employment for a boy whose energies were curtailed. Much tact is required here by school authorities, and, personally, I am in the habit of often compromising matters until a boy gets accustomed to school life; and it is almost amusing to find how

soon many boys, who come with requests for exemption from various forms of exercises, enter into the life of the school and themselves request that they may be allowed to engage in the usual athletic exercises of their companions.

My memory recalls several extreme instances of this, where boys brought letters from medical men, saying their hearts were faulty and that they ought not to indulge in athletics, in whom I could find no heart lesion, and who ere long shone in athletics with the best results to themselves. I have at the same time gratefully to acknowledge many most useful letters.

Recommendations to Assist in Lessening Possible Abuse.—I need only briefly refer to these, as not a few of them have already been mentioned.

1. *Medical Examination of Boys and Girls* ensures the detection of defects, and leads up to

2. *Their Classification for Exercise.* Physical ability should form the basis of classification.

3. *Proper Clothing.* Strict rules as to changing and drying of clothes should be enforced.

4. *Relation of Exercises to Meal Hours.* Hard exercise should never be taken for at least an hour after meals.

5. *Special Caution as to Resumption of Exercise after Illness.* This is an important recommendation. The possibility of latent illness during times of epidemics should also be watched for. This is a difficult thing to guard against in times of influenza. Known cases are easy to deal with, but a boy may conceal the fact that he is feeling unfit, because he is anxious to take part in a game. I remember, for instance, that once during the football season cases of influenza became numerous. It was doubtful whether we should be able to play a school match. The school had been warned that under no circumstances was any boy to play who felt unfit in any way. On Saturday morning the XV. was intact, and professed themselves thoroughly healthy. By twelve o'clock it had been decided that, for other reasons, the game should not take place. By two o'clock three members of the XV. were in the sick-room with high temperatures. They would not have been there if the match had taken place—not until the match was over and the mischief done.

6. *Supervision of Exercises* by games-masters and carefully selected school captains and prefects.

7. *Character of Exercises.* I desire to emphasise the importance of military training and cadet corps, and of runs, notably of

so-called distance and cross-country runs. These latter should not be competitive or run against time, but should be done walking and running alternately. They are most useful on bad days when field sports are impossible.

The importance of developmental movements in conjunction with severer forms of exercise, as I have frequently pointed out, is of the utmost importance in the minds of the ablest authorities, and ought to be a *sine qua non* in all schools.

DISCUSSION.

In the discussion which followed, Dr. Thomson said he had had over thirty years of experience at Loretto School, and during that time he had never known a case of cardiac breakdown resulting from athletics. It was important that boys should be trained by means of runs before being allowed to play football. The competitive element should be avoided in running. There should be equality of age or strength among the boys playing together. The effect of a certain amount of fatigue was very wholesome.

Mr. Smith of Merchiston Castle said that some training before games were played was most necessary. Gymnastics were of great advantage, and he regretted the passing of the older forms of gymnastic apparatus, because gymnastics as now taught tended to be a very dull form of exercise. In dealing with boys it was well to guard against the effect of mere physical brilliance and against over-interest in reports of games. It would be unwise to abolish the latter altogether unless something better could be substituted. The more a boy kept physically fit the less would be his parasitic interest in athletics.

If games were to be of any use there must be some element of risk. One must encounter danger in order to overcome it. The same applied to moral dangers. They should place a boy in such circumstances that failure was not fatal and that the chance of going right is greater than the chance of going wrong.

Mr. Cathcart emphasised the importance of system in connection with physical exercises. There had been a great improvement of physique in boys at public schools during the last twenty years, and it was very desirable that the benefits of physical training should be extended to all classes.

Mr. Tillard, of Cargilfield School, thought there was a danger of over-training in young boys. He doubted whether for young boys it was a good thing to be in a high state of physical fitness, or whether they should be allowed "to run soft."

Captain Dunlop insisted that systematised exercises should be carried out along with games. Games alone would not correct defects.

Dr. Strachan thought that in children, as in young animals, Nature prompted all the exercise that was required. The introduction of compulsion was wrong. There should be a gymnasium in every school, but the boys should be free to take exercise in it as they wished.

Mr. Stiles said that regular supervision of the physical training of young children was of supreme importance. The movements that developed chest and trunk were of very great importance, and for that reason he advocated swimming. He thought attention should be directed to children's boots, as wearing down at certain parts gave evidence of commencing bow-leg or knock-knee, and these conditions could be remedied in an early stage by appropriate alterations in the boots.

Dr. Goodall asked what exactly was meant by "training." Was it cardiac hypertrophy, or permeability of pulmonary capillaries, or some other change which enabled the athlete to undergo very violent exercise without breathlessness? He was inclined to doubt the wisdom of athletes in running on the toes. Their powers of doing so were admittedly much more limited than their power of running down at the heel. If a process of evolution had made man a plantigrade animal, was it really an advantage to him to run on his toes? He did not think that either a young child or a young animal was the best guide to its muscular development.

Dr. James Ritchie emphasised the importance of supervising and regulating a boy's exercise during the period of active growth, from 13 to 16.

Dr. Chalmers Watson said he would like to know the degree of cardiac hypertrophy compatible with health. He had seen cases of undoubted cardiac hypertrophy in public school boys. In some cases of greatly increased chest measurement the increase was due to emphysema. A boy with a family history of cardio-vascular disease required more care than usual.

Dr. Flett said that he was more and more convinced that the greatest benefit of athletics to the community was the moral benefit.

Dr. Burn-Murdoch replied.

NOTES ON SOME CASES OF REGULAR SLOW PULSE.[1]

By A. W. FALCONER, M.D., M.R.C.P.

Although it may still be too soon to accept the myogenic doctrine of the heart's action as beyond suspicion, there can be no doubt, even though it ultimately be proved to be untenable in its entirety, that the stimulus it has given to the exact clinical study of the cardiac action by simultaneous venous and arterial pulse tracings and electro-cardiograms must prove of great permanent value, and although with increasing knowledge our interpretations of some of these tracings may have to be modified, the tracings themselves must always remain as permanent records of fact.

The essential point of the myogenic doctrine is that it considers the heart muscle, independent of its nervous attachments, as capable of originating a stimulus to contraction, responding to it and conducting it from auricle to ventricle. Under normal circumstances the stimulus material is continuously and uniformly produced, in the human heart probably in the remains of the primitive cardiac tissue situated at the base of the superior vena cava, and is conducted from the auricle to the ventricle by the auriculo-ventricular bundle of His. Any other portion of the cardiac tissue, however, more especially the remains of the primitive cardiac tissue, if it become over-irritable, is capable of originating a contraction which will start at the site of the irritant. Mackenzie defines an extra-systole as a premature contraction of auricle or ventricle in response to a stimulus from some abnormal point of the heart, but where otherwise the fundamental or sinus rhythm of the heart is maintained. Following any contraction of the heart muscle there is a short period—the refractory period—during which the muscle is incapable of responding to any stimulus.

Bradycardia is a term which has been used indiscriminately to describe any condition in which the pulse is slow, irrespective of whether the slowing affects the whole heart or only the ventricles. Since we are now, however, by the aid of polygraphic tracings, in a position to differentiate various types of slow pulse, and as they have a very different clinical significance, the term bradycardia must be used in a more restricted sense. By a study of the movements of both auricles and ventricles, it is possible to divide the cases of regular slow pulse into two classes—

[1] Part of a paper read before the Aberdeen Medico-Chirurgical Society.

I.—*True Bradycardia*, where all the chambers of the heart take part in the slow rhythm, and

II.—*False Bradycardia*—(*a*) Cases of partial or complete heart block where the auricles pursue their normal rate, but owing to a defect in conductivity the ventricles can only respond to a certain proportion of the auricular stimuli or beat altogether independently of them. (*b*) Cases where owing to the regular recurrence of the various forms of extra-systole, the ventricular contraction either fails to open the aortic valves, or if so the waves are too weak to be appreciated at the wrist. (*c*) A combination of (*a*) and (*b*) where a regularly recurring auricular extra-systole fails owing to defective conductivity to pass on to the ventricles, but which, owing to the refractory period of the auricles, is followed by a compensatory pause.

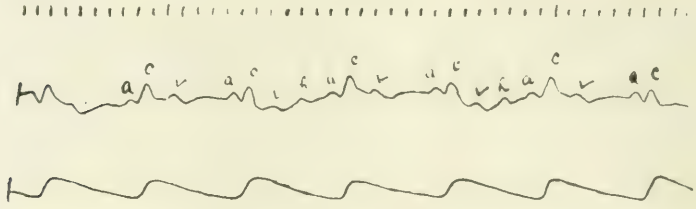

Fig. 1.

The following cases are examples of these various types of slow pulse:—

Case I.—Male, aged 53. Admitted into the Aberdeen Royal Infirmary, 2nd June 1909, under Dr. Edmond, to whom I am indebted for permission to refer to the case.

Patient's only complaint was pain in the legs and difficulty in walking. After walking for a short distance he experienced sharp cramp-like pains in the calves of the legs, which compelled him to stop and rest. He had had no headaches, giddiness, or loss of consciousness. There was no history of venereal disease. On examination the patient was found to present well-marked signs of arterio-sclerosis and moderate emphysema. The superficial cardiac dulness was diminished, the apex beat was neither visible nor palpable, and on auscultation the cardiac sounds were pure. The pulse was always quite regular, it varied from 42 to 64 beats a minute, and the pulse beats always corresponded in number to the cardiac sounds. Fig. 1 shows a simultaneous record of the radial and jugular pulses, the heart beating at 43 per minute.

The tracing shows that the condition is a true bradycardia, and affects both auricles and ventricles. The auricular, carotid, and V waves, marked A, C, and V respectively, appear in their normal sequence. That there is no impairment of conductivity is shown by the normal A-C interval. The time marker is one-fifth of a second.

Case II.—Male, aged 64. Admitted into the Aberdeen Royal Infirmary under Dr. Mackintosh, to whom I am indebted for permission to refer to the case.

For over two years patient had been troubled with weakness, some shortness of breath, and occasional swelling of the feet at night. In May 1908 he began to be troubled with dizziness

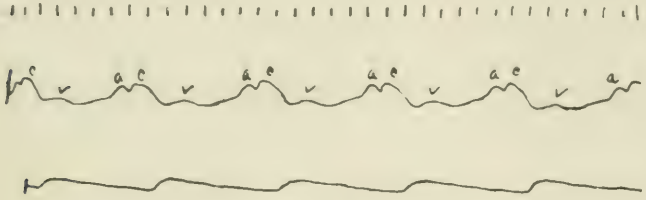

Fig. 2.

and a feeling of faintness coming on, especially after walking. The duration of the dizzy attacks was a few minutes, and, though he never fell or lost consciousness, he frequently had to sit down quickly to prevent his falling. For some time he had been troubled with winter cough. He had been a heavy smoker, a moderate drinker, and denied ever having had venereal disease. The patient was well nourished. His chest showed well marked signs of emphysema. The superficial cardiac dulness was almost obliterated, the apex beat was neither visible nor palpable. On auscultation the sounds were feeble, and there was a slight mitral systolic murmur. The cardiac sounds corresponded with the radial pulse. During the time the patient was in hospital the radial pulse was quite regular, and varied in rate from 40-48 beats a minute. The tracing, Fig. 2, shows the same features as Fig. 1. The three waves in the jugular pulse are present in their normal sequence and the A-C interval is normal.

Both these cases, therefore, are examples of true bradycardia, the slow rhythm affecting both chambers of the heart, and the auricle and ventricle contracting in their normal sequence.

Case III.—Male, aged 60. Admitted into the Aberdeen Royal Infirmary under Dr. Edmond, to whom I am indebted for permission to refer to the case. Patient was admitted complaining of pain in the chest and attacks of unconsciousness. He had had no previous illnesses, denied venereal disease, and had always been moderate in alcohol and tobacco. Until three months before admission he had been employed as an engineman, and had not had heavy manual labour. For the last three months he had been engaged in work which required much heavy lifting, to which he attributed his present illness. His wife states that a week before admission when going to bed he suddenly fell against the bed and became unconscious. He was not convulsed, but remained unconscious for some minutes, when he again became all right. On the day before admission he suddenly felt a severe pain in the middle

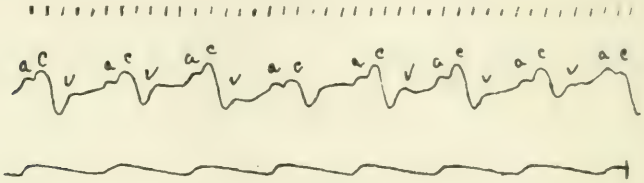

Fig. 3.

of the left axilla. It came on suddenly, lasted about 10 minutes, and then suddenly disappeared. The pain was very acute and knife-like in character, and while it was present he was afraid to move or draw a deep breath. On the night of admission to hospital when he was buying a paper the pain came on again, and he dropped down unconscious. He remained unconscious for some minutes, but after about 10 minutes he was able to be helped into a cab and brought to the Infirmary. On admission he answered questions in the casualty room, but next morning he had little recollection of how he got into the Infirmary. The patient was intelligent and well nourished. The examination of the heart showed a visible apex beat in the 5th space just inside the nipple line. There were no bruits, the aortic second sound was accentuated. The pulse during his stay in hospital varied considerably in rate, and was occasionally irregular in rhythm. At times with a pulse-rate as low as 45 and quite regular in rhythm, the sounds of the heart corresponded in number to the pulsations at the wrist. At other times with a similar pulse-rate a normal first and second sound were heard, soon followed by a single sound like a first

sound, and then a long pause. Numerous tracings were taken during his stay in hospital.

Fig. 3 was taken on 11th November, and shows the pulse beating quite regularly at 50, and the jugular tracing shows that at this date the condition was a true bradycardia as in Cases I. and II. The A-C interval is quite normal.

Fig. 4 is a sphygmographic tracing taken when the pulse was 45. It will be seen that the first portion of the tracing is quite regular, but at the end of the tracing are seen two interpolated beats,

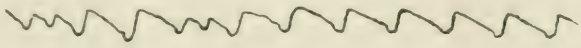

Fig. 4.

which are obviously interpolated ventricular extra-systoles. Hence at this date the pulse was actually beating faster than the true sinus rhythm of the heart. The most frequent condition of the pulse, however, is shown in Fig. 5. When the heart was beating with this rhythm, the pulse appeared to be beating perfectly regu-

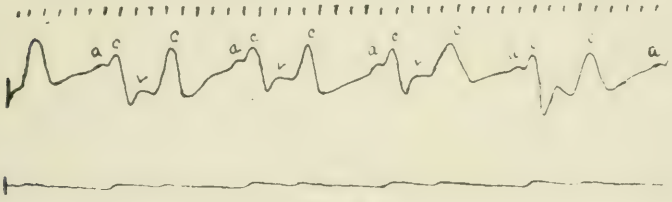

Fig. 5.

larly at 33 a minute. On auscultation, however, a single sound was heard in the early part of diastole. The tracing shows that the bradycardia was only apparent, and that the finger failed to appreciate the regularly recurring small waves seen in the radial tracing. The jugular tracing shows that corresponding to each large wave in the radial tracing there are the three normal jugular waves, and corresponding to the small waves in the radial tracing is a single large wave marked C. We have here, therefore, a regularly recurring nodal extra-systole, followed by a full compensatory pause, and the real sinus rhythm of the heart is 66 and not 33. At first sight it appeared possible that these extra-systoles were interpolated as in Fig. 4, and not nodal, and that therefore the sinus rhythm was still only 33, but it will be seen that the time of occurrence of the extra-systoles in Fig. 5 differs

from the interpolated ventricular extra-systoles in Fig. 4, in that they appear in the early part of diastole and are followed by a long pause. The diagram Fig. 6 shows the difference in the two forms of extra-systoles. On other occasions these nodal extra-systoles appeared in series of 5 or 6, *i.e.* short attacks of paroxysmal tachycardia, and it is probably to those, and not to the bradycardia, that the patient owed his attacks of unconsciousness. In this case, therefore, we have at times a true bradycardia of 45, but more frequently a false bradycardia due to the occurrence of a regularly recurring nodal extra-systole.

Case IV.—Male, aged 40. Admitted to the Aberdeen Royal Infirmary under Dr. Edmond, to whom I am indebted for permission to refer to the case. Patient had scarlet fever as a child.

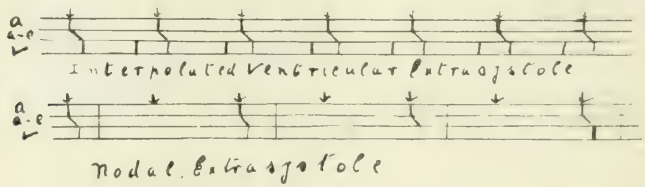

Fig. 6.

He never had rheumatic fever. For some years he has known he had renal disease. For the past three years he has been troubled with shortness of breath, and for the last three months with swelling of the feet. On admission patient had marked orthopnœa, and there was great œdema of the feet and legs. The urine was of a sp. gr. of 1020, contained 0·4 per cent. albumen and numerous hyaline and granular casts. The quantity was about 30 ounces a day. The examination of the heart showed a visible apex beat in the 5th space just outside the nipple line. On auscultation a normal first and second sound were heard, almost immediately followed by a third sound, which had more of the character of a first sound, and then a long pause. A fourth sound following the third sound was never heard during the first few weeks of his stay in hospital, though it later occasionally appeared. There were no bruits, and the aortic second sound was markedly accentuated. The systolic blood-pressure was 195 mm. mercury.

Fig. 7 is a simultaneous record of the apex beat and the radial pulse, and shows that the third sound heard on auscultating the heart was due to a regularly recurring extra-systole, which failed

to reach the wrist, and which is followed by a compensatory pause. This tracing closely simulates the coupling of the beats described by Mackenzie as occurring in hearts beating with the nodal rhythm under the influence of digitalis, but it will be seen there

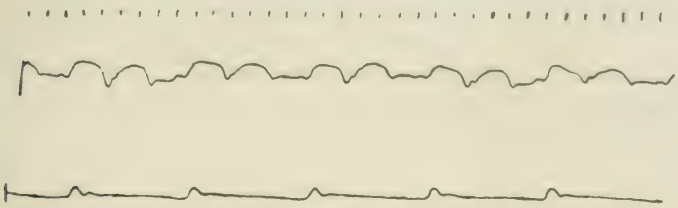

Fig. 7.

is distinct evidence of an auricular wave preceding the ventricular waves in the cardiogram.

Fig. 8 is a simultaneous tracing of the radial and the jugular

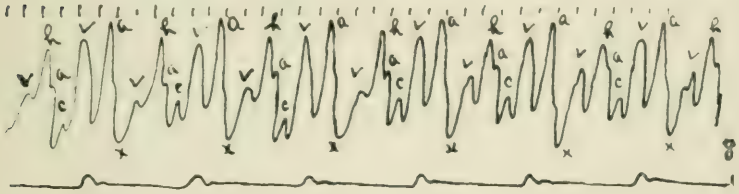

Fig. 8.

pulses. The extra-systole which fails to open the aortic valves is auricular in origin, there being a well-marked A wave. On the fall X due to the auricular diastole a slight break is seen, due,

Fig. 9.

probably, not to any transmitted wave from the carotid, but to the other factors which combine to form the C wave. The fall X of the extra-systoles is followed by well-marked V wave, and then by a sharp rise marked h. This h wave occurs only in the compensatory long pauses and is a diastolic wave, which frequently appears in slow-beating hearts. It is due, according to Gibson and Hirschfelder, to the floating up and consequent temporary

closure of the tricuspid valves by the sudden rush of blood into the ventricle from an auricle unusually distended by the long diastole. The h wave is interrupted by the A wave of the next effective systole, and this A wave is followed by a well-marked C wave corresponding to the wave in the radial tracing. The

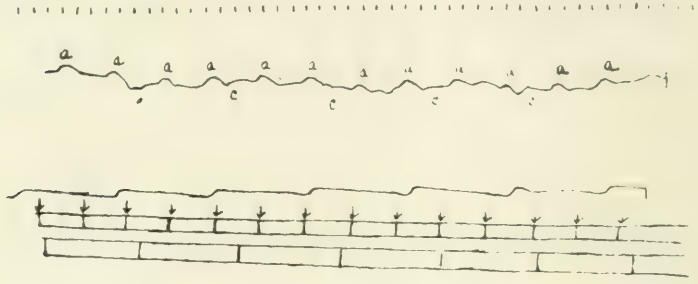

Fig. 10.

apparent bradycardia in this case is due, therefore, to a regularly recurring ineffective auricular extra-systole, as shown in Fig. 9.

Case V.—Male, aged 51, under the care of Dr. Edmond, to whom I am indebted for permission to refer to the case. Patient had had no serious illnesses. He was an iron-driller to trade, and

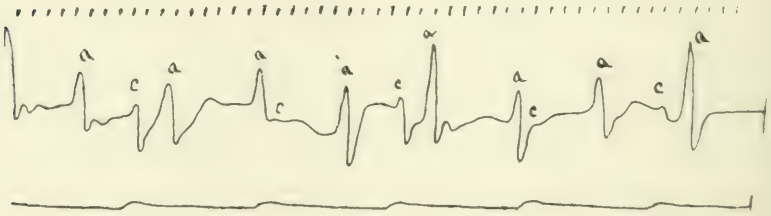

Fig. 11.

had had very hard work. He had always been moderate in alcohol and tobacco, and denied venereal infection. For some eight weeks before patient came up to hospital he had been troubled with shortness of breath, some cough, and a choking feeling at his throat on exertion. He had never lost consciousness, and was not troubled with dizziness. On examination of the chest the apex beat was neither visible nor palpable. The sounds at the apex were best heard in the 5th space in the nipple line. They were pure, and in addition to the normal "lub dub" an

extra sound was occasionally heard during diastole, which had no constant relation in time to the diastole. There was considerable fluttering pulsation on the right side of the neck, but it could not be timed with any accuracy. The tracing, Fig. 10, shows a regular radial pulse of 43 and a jugular pulse with complete dissociation between the auricle and ventricle. The auricle and ventricle are beating quite independently of one another, the auricle at 90 and ventricle at 43 per minute.

Fig. 11 is a tracing from a case under Dr. Mackintosh, presenting the typical features of Stokes-Adams disease, which will later be published in detail. It also shows complete dissociation between auricle and ventricle, the auricle beating at 50, the ventricle at 32.

The slow pulse in cases 5 and 6, therefore, is a false bradycardia due to defective conductivity between the auricle and ventricle.

CANCER OF THE COLON.[1]

By ALEXANDER DON, C.M., F.R.C.S.
Hon. Surgeon to and Lecturer on Clinical Surgery in Royal Infirmary, Dundee.

Cancer of the colon occurs with sufficient frequency to make its consideration of some importance to every surgeon. It is most common about the age of 50, but I have met with it in a girl of 18, and in people of over 70. Tuttle[1] found that in about 45 per cent. of cases cancer of the colon occurs in the cæcum and ascending colon, in 30 per cent. in the sigmoid, and in 25 per cent. in the transverse and descending colon.

Much has been written regarding the disease, and, if early diagnosed, surgeons can now remove it with greater immediate safety and better ultimate results. It occurs chiefly in two forms: (1) as a scirrhous or hard ring or narrowing of the bowel, and (2) as a large fungating fleshy mass situated on the wall of the bowel, usually on one side only and protruding into the lumen.

The symptomatology of the two forms is quite distinct. The *first* gives rise to no tumour at any time, and is usually recognised when stenosis of the bowel is so advanced that the contents are with difficulty forced onwards. If high up in the colon the bowels may be fairly regular, and obstruction may be almost complete before any symptoms direct the patient's attention to the disease. When the narrowing is lower down, there are attacks of colic much earlier and more frequently, owing to the more solid consistency of the fæces, and constipation is marked. If a daily movement is neglected, decomposition above the obstruction from bacterial action takes place and a colicky diarrhœa follows. This may be simulated by the taking of aperients.

In the *second* variety there is usually some pain, or what the patient more properly describes as uneasiness. He complains of flatulence, and says it occurs always about the same place. If very observant, he may have noted that there is pain on deep pressure at this part, with perhaps some fulness, or even a lump. A muco-purulent diarrhœa soon sets in, and there is a feeling of incomplete relief after defæcation; if the obstruction be low down, there is tenesmus. Bleeding is more likely to occur in this variety, as there is protruding into the lumen an ulcerated proliferating mass.

[1] Read before the Forfarshire Medical Association.

It has been said that cancer of the colon has no symptomatology—that obstruction of the bowels is often the first sign that the patient observes—but this is hardly correct. There are always premonitory symptoms, not very marked it may be, but still noted and complained of by intelligent patients, though their significance is often missed by the doctor.

Cramer[2] diagnoses cancer—"When an individual, who has always had regular action of the bowels, complains of increasing irregularity, with violent attacks of colic and haemorrhage." There is also a "stiffening of bowel"—"*Darmsteifung*" of Nothnagel—when palpated by the hand. There is a splashing sound due to intestinal stenosis—called sometimes a hissing sound, and quite distinctly heard even at some distance.

A good deal of information may be got from X-ray examination after a bismuth meal.

Other symptoms that are noted at times are no more pathognomonic, such as loss of appetite, impaired digestion, with wasting, a persistent but not high temperature—99-100 F. Haemorrhage is very infrequent, especially in the scirrhous variety. Indicanuria is frequently noted when there is obstipation, and is always present in obstruction.

In addition to these symptoms there soon arises what has been called the "cancer cachexia." Sometimes this is the only visible sign of illness, and for this symptom the patient is treated. The condition is often mistaken for pernicious anaemia. In the appearance of the patient these diseases, if there is such a disease as pernicious anaemia *per se*, are very like one another. We have been taught to distinguish pernicious anaemia chiefly by the blood examination. Poikilocytosis is the main symptom, and the haemoglobin index is high.

There is both in cancer of the colon and in pernicious anaemia a lemon-yellow tint all over the body, not quite what we call jaundice, for it is hardly so dark. There is the wasting of the patient, the shortness of breath, the inability to do hard work. The anaemia soon becomes extreme. If the patient dies, and there is no autopsy, and no other pathological condition is detected during life, we call the disease pernicious anaemia. But often towards the end of such cases abdominal symptoms obtrude themselves on our notice, and the diagnosis has to be revised when too late to attack the disease.

Cachexia, if we may still retain a word that conveys so little that is of definite and practical value, is due in many cases to

toxæmia or septic poisoning from ulceration of a diseased part which has become infected with pathogenic organisms, both saprophytic and parasitic. The amount of anæmia produced is similar to what we find in all wasting and suppurating diseases, such as open tuberculosis, whether of the lungs or joints.

Clairemount and Ranzi[3] showed that in obstruction of the bowels toxins are produced which are extremely poisonous, and have a hæmolytic action when administered to dogs and horses, and Girgard-Mangin[4] also found that malignant tumours are characterised by the toxicity of their extracts. He found that the more cell-growth there was in the tumour, the more poisonous it was. He thinks this poison is of a colloidal nature.

It seems likely that, apart from the septicæmia, there may be some toxin of a hæmolytic nature produced in cancer growths; and as the blood cells are destroyed their colouring matter produces the lemon colour seen in the skin. The thereby diminished number of red cells would prevent the proper nourishment of the organs, and the result would be a loss of weight and debility. The effort of the hæmopoietic organs to replace the red cells gives rise to the variety of shape of cell, or poikilocytosis, due to half-formed and immature ones being thrown into the circulation, and this poikilocytosis has been regarded as symptomatic of pernicious anæmia.

Once this condition of the blood is diagnosed, or even suspected from the cachetic appearance of the patient, the physician should be on the outlook for malignant disease. Though it is unlikely that this will always be evident, it is quite possible that the patient may, when describing his illness, sufficiently indicate some spot pointing to a pathological condition of the alimentary tract, but so obscure as to make it incumbent that a laparotomy be suggested.

The high colour-index of the blood in pernicious anæmia has been held to distinguish the two diseases, but if the cause be in both cases a destruction of the red cells by lysinogens, the result would also be clinically similar. It is true that in malignant disease the hæmoglobin index in some recorded cases has shown a fall corresponding with the diminished number of red cells, but in these cases a septicæmia may also have been at work, and the anæmia may not be wholly owing to lysinogens.

The disease has also to be distinguished from tuberculosis, especially of the cæcum. This is said to be more tender to touch, less liable to obstruction, and not accompanied with so much

wasting; but even with a laparotomy the differential features are not reliable.

The scirrhous variety tends to cure itself, for there is a contraction of the newly formed and inflamed fibrous tissue round the cancer cells which destroys them. Unfortunately this contraction is fatal also to the patient, for it invariably produces obstruction. Nor does it prevent metastasis, for the cancer cells escape along the lymphatic channels before fibrosis has time to take place.

It is rare to find infection travelling outwards along the abdominal wall, but occasionally in cancer of the cæcum one finds the broad ligaments and ovaries affected as if the disease had spread against the lymph current. Permeation does not seem to be the only means by which metastasis takes place, for the glands, though late in being infected, often show cancerous deposits without any sign of fibrosis or scarring of the intervening tissues, and it is not an uncommon thing to find the liver affected in cancer of the sigmoid or rectum without there being any connected infection of the lumbar chain of glands.

Jamieson and Dobson,[5] in discussing the arrangements of the lymphatics of the colon, state that they occasionally seem to communicate with the veins. Though it is probable that the injection of these veins may have been accidental, there is no reason why it should be impossible that lymphatics from the intestines should open directly into the veins of the abdomen, and thus spread the disease.

The Lymphatic System.—The arrangement of the lymph glands of the colon corresponds almost entirely to the arrangement of the arteries.

W. J. Mayo[6] states that the number of lymph glands and vessels in the lower part, that is to say from the splenic flexure to the beginning of the rectum, is proportionately less than that of the rest of the colon, and he suggests as the reason that this part of the bowel is practically a non-absorbing surface, and acts merely as a receptacle for fæces. He points out that here peristalsis is reversed, and the importance of this in giving nutrient enemata, or in Murphy's method of proctoclysis.

This paucity of lymphatics is also briefly hinted at by Cuneo and Porrier.[7] But Mayo himself points out that drugs are readily absorbed in this region, and according to other investigators, such as Jamieson and Dobson, the lymphatic supply of the lower part is just about the normal, though the intermediate glands are

fewer. It cannot be gainsaid that the faeces have become drier in this half of the colon, but this is a process that has been going on in the small intestine, and has been more or less completed only at the splenic flexure of the bowel. In fact, it is just this consistence of the faeces and where it takes place that distinguishes the normal from what we are in the habit of speaking of as the diseased bowel, with constipation or diarrhœa.

The blood-vessels of the colon are not at all regular, but generally one can make out a vessel going towards the cæcum and supplying the lower end of the ileum, the cæcum, and ascending colon: this is the ileocolic artery. A branch of the superior mesenteric artery goes to supply the transverse colon, and another to the hepatic flexure. The first is the middle colic and the other the right colic artery. A fairly large branch of the middle colic may replace the right colic. The left colic artery, a branch of the inferior mesenteric, arises high up close to the duodenum, and passes out towards the splenic flexure. The sigmoid arteries may be branches of this artery, but more often they arise as two separate branches from the inferior mesenteric lower down.

All these vessels anastomose by arches with one another and with their own branches, so that in very few places would a blockage of a single stem completely cut off the circulation to any part of a healthy colon, though Kronlein[8] points out that in four cases out of five the transverse colon itself will not be nourished in its whole extent if the middle colic vessels are ligated.

Following the arrangement of the arteries, we may describe an ileocolic, a middle colic, a left colic, and a sigmoid group of glands. These groups are not detached units, but each group consists of (1) some mere glandular nodules in the walls of the bowel and in the appendices epiploicæ; (2) a marginal chain, well seen when diseased, lying close to the mesenteric border of the bowel; (3) glands occupying the angles where the arteries divide to form arches, and also many connecting glands lying along the branches of the vessels themselves in the mesocolon, or, if this is absent, in the retroperitoneal tissue; (4) glands lying close to the origin of the branches, and in front of the large abdominal vessels. These form when enlarged easily recognisable masses between the duodenum and the pancreas on the superior mesenteric, and under the duodenum and downwards to the aortic bifurcation on the inferior mesenteric.

The lymph is finally discharged into the lumbar chain of glands, but the lower end of the pelvic colon sends lymph vessels direct to the lumbar glands.

One reason for dividing the glands into the above groups is that so very few of the lymphatic vessels pass the group of glands lying close to the bowel, and these few reach the intermediate glands along the course of, or at the bifurcation of the arteries, and consequently there is little chance of early infection of the glands round the origin of the arteries, which would necessitate their removal by ligature of the main vessels and a tedious dissection of the glands.

The above is less true of the lymph arrangement at the hepatic and sigmoid flexures, where lymph vessels go direct to the glands on the main vessel without entering the intermediate glands. This makes the prognosis in cancer of these regions less hopeful. There is also a lymphatic connection between the splenic flexure and some glands lying over the splenic and renal arteries, and also between the transverse mesocolon and the glands of the great curvature of the stomach and omentum, and again between the hepatic flexure and the glands about the head of the pancreas and duodenum. The close relationship is easily understood when one keeps in mind the communications between the blood-vessels supplying these organs.

Notes of Cases.—The following three cases, which have been recently under my care, are typical of the regions in which they occurred, and will show how much the symptoms may suggest if one is on the alert for cancer.

Case I.—G. R., male, æt. 43, a foundry worker, had always been regular in the bowels. He never had had to take medicine to procure evacuation until three months before I first saw him. At that time he had severe pain over the lower part of his abdomen and could not get his bowels to move, though he could always pass flatus. He tried aperients, but these had no effect. Later, the pain abated and the bowels moved. Difficulty of getting relief was never afterwards absent, and sometimes, if the pain was very severe, he noticed a lump on both sides at the same time. These lumps soon dissolved and caused much rumbling. A severe attack occurred about a month ago, which was relieved by a soap-and-water enema. He refused colotomy. His present attack had lasted for four days, with colicky pains. Retching and vomiting followed, and some fæcal matter came away with enemata. The lower part of the abdomen was slightly swollen, and a tympanitic note was elicited over the whole of it. A soft

mass was felt in the left iliac region. Two days later he was put under chloroform. No tumour could then be felt, and the incision was made in the mid-line of the abdomen. The tumour was found in the upper part of the descending colon. A piece of the colon, about 12 inches in all, was removed, and an end-to-end anastomosis performed. The specimen shows the bowel doubled on itself and adherent. The mesentery was hard and fibrotic opposite the constriction, but no distinct glands were felt. There was a good deal of pain during the night following the operation—a "steady ache" he said. He had morphia, $\frac{1}{4}$ gr. Next day, a good deal of bloody serum came away. Two days later the pulse rose to 120, and the temperature to 100 F. He was given $\frac{1}{60}$ of a grain of strychnine, with $\frac{1}{100}$ gr. of digitalin. There was some vomiting of a bilious fluid and much retching, but after a rectal injection this stopped. Next day he passed a well-formed stool, and the wound when dressed seemed perfectly sound. In the evening he had another normal movement, and immediately following this he experienced great pain in the abdomen, for which he twice got $\frac{1}{6}$ of a grain of morphia. He passed a rather restless night. Next morning his bowels again moved, but there was now evidence of serious internal trouble, and he died the same afternoon, *i.e.* four days after the operation. Chlumskij,[9] in his experiments on dogs, found that the intestinal union is weakest on the fourth day.

When the wound was opened, post-mortem, faecal matter was found in the peritoneal cavity, but well walled off. There was a large opening at the mesocolic union, which looked as if the bowel had been gangrenous before bursting, and such an accident would best explain the fair progress he had made during the first day or two. Mayo[10] says that perforation after obstruction is due in most cases to thrombosis of the arteries, and recommends great care and gentleness in operating.

A preliminary right colostomy or a Paul's operation would have given this patient a much better chance, but in the actual resection the bowel was not mobilised sufficiently, and as the specimen shows, too little beyond the disease was resected. At the time I felt there was rather a strain on the sutures.

CASE II.—Mrs. R., æt. 60, a preserve worker, had had abdominal pain for some time. About four weeks ago she was at her work, when she was seized with a gnawing, twisting pain across the lower abdomen. She went home and to bed and took

cascara. This moved her bowels and the pain left. She stayed off work, because she was losing flesh and was not feeling fit. She had gone completely off her food.

About a week later she had another attack. She took cascara again, but it was ineffectual. She then took castor oil. Her bowels moved, but the pain never went away altogether, and she was troubled with flatulence. This went on for a week or so. She became very weak and took no food, and her bowels never moved again during all that time. She called in Dr. Low, who gave her something which produced only a feeble result. Later, her bowels would not move at all, and she had to get injections. Very little came away even then. Her stools were never blood-stained, and she had never seen any mucus or slimy matter pass per rectum. She has always been constipated. She has had no trouble in passing urine.

On examination, the abdomen was distended and very resonant all over; the wall was rather poorly nourished; the superficial veins stood out very plainly; the transverse colon could be palpated crossing the epigastrium. The cæcum was also distended with flatus, and very resonant. There was a hard nodular thickening in the region of the stomach. This could not be freely palpated on account of the distended colon. There was no complaint of tenderness over any part except in the left iliac fossa. Her skin and mucous membranes were of a pale yellow colour.

She was given morphia, hyoscine, and atropin in the morning, and later, under ether, an incision was made a little to the right of the middle line below the umbilicus. The abdominal wall was very thin. A constricting growth was found at the middle of the transverse colon. This was resected, and an end-to-end anastomosis done. Several glands were felt to be enlarged in the mesocolon, which was much cicatrised, and were removed along with the bowel. About 5 inches was excised altogether.

After the operation the patient improved rapidly, and was fed by mouth from the second morning. There was very little abdominal pain, and she left the hospital three weeks after the operation.

It is just questionable whether the condition of this patient before operation did not rather point to the necessity of a preliminary colostomy or a Paul's operation, but the condition of the bowel itself made me think that I was safe with immediate excision and anastomosis. This presented no difficulty, but the glands affected were rather close to the gastro-epiploic arteries,

ligation of which would have meant resection of part of the stomach—a far too serious operation for a woman of her age and condition. Dr. Low later reported that the patient died from recurrence, apparently about the stomach or mesocolon. A tumour could be felt, but there was no symptom of obstruction. She took her food well, and was much more comfortable than if no operation had been performed.

Case III.—W. C., æt. 55, was seen in consultation with Dr. Macdonald, Dunkeld. He was a man of active habits, educated and intelligent. For about a year he had suffered from what he called "delayed digestion." About two or three hours after a meal, there set in a fulness over the right iliac fossa. The symptoms were not referable to the stomach region. His chief complaint was of flatulence. For the last six months he had noticed a swelling on the right side, less marked on lying down, over the iliac region. He could touch the spot, and when he pressed it, he felt slight pain. He stated that the touch at the beginning of his trouble merely felt different from that at any other part of the abdomen. The bowels were inclined to be sluggish. He had dieted himself, avoiding starchy foods or any which provoked fermentation.

Six weeks before I saw him, he commenced to have colicky pains over the right side. The spasms were most marked about two hours after meals. After a spasm, which was of short duration, he would be free from pain or discomfort for an hour or so, when the spasm might be repeated, or he remained comfortable till after partaking of another meal. His blood-count was 2·14 m. per c.mm. The cells showed no evidence of the presence of organic disease.

For the last two months he had gradually lost weight, and at the time of the operation was 7 st. 10 lbs. The skin and mucosa were of a lemon yellow tinge.

The tumour was quite palpable just under the right costal margin. It was somewhat fixed in position, moving laterally but not vertically. He complained of very little pain on palpation.

Operation.—An oblique incision was made from the tip of the eleventh rib downwards and forwards to the umbilicus. The rectus was not divided. The tumour was located, and the whole ascending colon with the hepatic flexure and a third of the transverse colon was mobilised and brought outside.

After resection the end of the transverse colon was closed, and an anastomosis effected by uniting the ileum to the colon within 2 inches of its closed end. There were no after-effects locally, and the temperature never rose above the normal. He was able to be out at the end of a fortnight, and caught a chill after a rather long walk. With rest he has recovered completely, and has now gained 15 lbs. in weight.

The operation was done in July last, and in September the red cells had increased to 3·8 m. per c.mm.

These cases bring out most of the symptoms of cancer of the colon, and in every one the disease was recognisable for some time before operation.

Pre-operative Treatment.—When the condition of the patient will permit, it is advisable to have the bowels as empty as possible. This may be accomplished by enemata and gentle aperients. Most operators prefer a clear day between this evacuation of the bowels and the operation. But it may be doubted whether this gain in the quietening of the bowel is not a loss, when one thinks of the growth of the bacteria. There is also the consideration of the patient, which makes it impossible to lay down any fixed rule.

If obstruction is present, no treatment before operation will help the patient, and delay in operating only adds to the risk. If the patient is much weakened, a few days' preparatory feeding with sterilised and pre-digested fluids will help to bring him into a fitter condition, and will give time for rendering the mouth and bowel less septic. A few small doses of calomel will help to prevent much flatulent distension.

Operation.—In planning the removal of cancer of the colon, the chief point to remember is the dissemination of the disease. If the glands be palpably affected close up to the origin of the colic arteries, and if the hard irregular outline of a cancerous gland as contrasted with the smooth regular enlargement caused by septic absorption from ulceration be made out, or if the peritoneum in the neighbourhood or the bowel-wall be studded with cancerous nodules, or if the liver be already affected, there is no possibility of complete extirpation of the disease.

The question of local removal may still have to be determined, for the surgeon can now see how soon the bowel will reach the state when obstruction will take place; and though he knows he is not curing the patient of the disease, he should consider the advantages of an immediate anastomosis with removal of the

stricture as compared with a future enterostomy, when obstruction has supervened.

If obstruction is already present, it is almost universally agreed that some form of drainage of the bowel should be carried out for some days.

Later an anastomosis may be desirable, and in draining the bowel one should keep this in view. Paul's operation is one of the simplest and safest methods of effecting both.

The question of the extent of colon to be resected is next considered, and this should be determined more by the ease of anastomosis of the cut ends than by the question of actual bowel involvement, for it is always wiser to remove too much than too little. By mobilisation of the bowel the whole operation can be done completely extra-abdominally in all but very stout people. Mobilisation is accomplished by cutting or tearing through the peritoneum externally to the bowel, and then by gentle insinuation of the fingers behind, stripping the bowel from the posterior abdominal wall up towards the origin of the vessels. At the hepatic flexure care is necessary, so as not to injure the duodenal vessels, nor raise the kidney from its bed; and at the splenic flexure the costo-colic ligament has to be divided to allow the bowel to be brought out. The ureter may be lifted forwards with the peritoneum, and must be gently freed and replaced to avoid including it in the ligatures.

When enough of the bowel for easy union has been brought out, the next step is to ligate the vessels, beginning opposite the disease. This is done as near to their origin as possible. Working from this point the bowel is reached along two arms of a V, each vessel being tied where seen or felt pulsating, and the rest of the mesocolon by mass ligatures of silk or chromic catgut. It is then easy to see how much of the bowel has had its blood-supply cut off, and to place the clamps where there will be no danger of gangrene.

The question of method of anastomosis must depend on the surgeon and on the case. The only point of importance to bear in mind is that a leak is almost certain to occur if end-to-end anastomosis is attempted where much of the bowel is uncovered by peritoneum, *i.e.* where there is no mesocolon. But there is no reason for such anastomosis, as there is far less danger in removing an extra piece of colon than in anastomosing a movable to a fixed piece of bowel.

The skin incisions have always seemed to follow routine

methods. Central and semilunar ones are still the rule. There is no objection to the first, if perfect primary union takes place after layer sutures, but the second always means destruction of the nerve supply to the rectus muscle and a certainty of atrophy, with probably a hernia if the patient long survives the operation. The incision parallel to the vessels and nerves gives quite as free exposure as the vertical incision, and a vertical incision at the inner end after dividing the rectus can be added upwards or downwards as deemed necessary.

With free mobilisation of the bowel very little packing off is required, and the patient suffers little shock, from the fact that he may be almost entirely out of anæsthesia during the suturing of the bowel. Retraction of the edges of the wound is not necessary, and this, whether done by the hand or by any of the mechanical retractors, always does a certain amount of injury to the parietes, and always produces a certain degree of shock. With the bowel outside, there need be no soiling of the peritoneum, and as there is no tension, the union of the bowel can be made perfectly secure.

As to the method of suture, I prefer the inner suture to be of catgut, and entered every time from inside the gut as in post-mortem work, while the other suture is also a continuous one and of some less absorbable material, such as silk or cotton thread. The chief point is to bury the mucosa completely, and bring the peritoneal surfaces together without tension.

Post-operative Treatment.—There does not seem to be much difference of opinion at present as to the necessity of encouraging peristalsis, either by enemata or continuous proctoclysis, though one wonders why some leave the bowel to become quiet before the operation after the aperient has acted. Fowler's position is generally to be preferred as safer, but no position is safe, if safety depends on it. There should be no unrecognised and untreated post-operative peritonitis.

After-Results.—The immediate mortality ought not to be very high, nor does the site of the tumour affect the mortality percentage. In Lardennois's[11] cases, the mortality was at first over one-third, no matter where the obstruction, and in Mayo's cases the percentage mortality differs only a little with the region affected.

The percentage of operative fatalities has diminished greatly during the last decade, and many cases of recovery are recorded. In 1905 Moynihan collected 100 cases with a mortality of 27 per cent., but the majority of these were primary resections.

When the operation is done in two stages, the mortality is about 13 per cent. If we compare this with the old operations done by surgeons whose experience extended to more than 100 cases, we find that out of 475 cases 187 died—a mortality of 40 per cent. Czerny[12] had a mortality of 50 per cent., and Woller[13] of 54 per cent.

The greatest danger, viz. attempting to unite an obstructed bowel, is now seldom incurred.

Operative sepsis, which is next to leakage in its fatal consequences, is not so serious as it has often been represented to be. The risk is much the same whether the contents be fluid or solid —whether in cæcum or sigmoid. I am convinced that most of the sepsis follow soiling of the tissues and surfaces after they have been injured by rough swabbing and handling, and by retractors during the operation.

Dudgeon and Sargeant observed that, where disease or obstruction of the bowel had persisted for some time, the streptococcus albus was found in the peritoneal cavity, and that this organism was inimical to a serious attack of peritonitis from bacillus coli infection. This probably minimises the danger of resection in colon disease.

The main point in abdominal surgery seems to be gentle handling, or rather as little handling as possible, and avoidance of tension at the line of union.

The ultimate results of recent operations on the colon have not been recorded by very many surgeons. The number of such cases falling to each individual surgeon are few, and the difficulty of collecting the recorded cases and framing statistics is so great, that we depend on the published records of a few surgeons, and their results would seem to warrant an expectation of cure in over half the cases operated on.

References.—[1] Tuttle, *Med. Record*, 4th November 1905. [2] Cramer, *Münch. med. Wochenschr.*, 17th June 1902. [3] Clairemount and Ranzi, *German Med. Congress*, 1903. [4] Girgard-Mangin, *Les Poisons Cancereux*, Paris, G. Steinheil, 1909. [5] Jamieson and Dobson, *Proc. Roy. Soc. Med. Lond.*, 1908-9. [6] W. J. Mayo, *Annals of Surgery*, 1909. [7] Cuneo and Porrier, Leaf's Translation. [8] W. J. Mayo, *Annals of Surgery*, July 1909. [9] Woollcombe, *Brit. Med. Journ.*, 10th January 1903. [10] W. J. Mayo, *Journ. Amer. Med. Assoc.*, September 1907. [11] Lardennois, *Thèse de Paris*, 1899. [12] Czerny, *Schiller Beiträge z. klin. Chir.*, 1896. [13] Woller, *German Surgical Congress*, 1896.

DISEASES OF BONES AND JOINTS AS SHOWN BY THE X-RAYS.[1]

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DURING the past two years 2800 patients have been examined in the X-ray department of the Dundee Royal Infirmary. Of these fully 300 were cases of diseased joints and bones. For convenience they might be arranged in four classes, thus :—

I. Disease of bone where the shadow is *increased* in size or density.
   e.g. Periostitis, Osteitis, Osteoma, Osteosarcoma, Osteomyelitis.

II. Disease of bone where the shadow is *diminished* in size or density.
   e.g. Caries, Bone Cysts, General Atrophy.

III. Disease of joints where the shadows of the bones are normal.
   e.g. Acute Synovitis.

IV. Disease of joints where the shadows of the bones are increased or diminished in density.
   e.g. Osteoarthritis, Carious Synovitis.

Most of these conditions can be easily recognised by means of the fluorescent screen, but the negative shows still more clearly the departure from normal.

I. If the bone is not affected, its outline is distinct, clean-cut and regular; the breadth of the shadow is uniform; the medulla is seen as a lighter streak; even the minute structure of the ends (regular fine striation) can be made out; and, in young patients, the epiphyses can be easily observed. But if disease of the bone is present, there is a marked alteration in the shadow visible on the screen. The following are examples of those cases that are most frequently met with.

1. *Periostitis.*—The patient gives the history of an injury to the bone.[2] The screen shows that the edge of the shadow is ill-

[1] A paper read before the Forfarshire Medical Association on 3rd March 1910.

[2] A history of injury is not always given. Dr. Parkes Weber has recently described a case in which all the long bones showed signs of periostitis. There was no history of injury, and no pain. There was lymphadenoma of the mediastinum (*Proc. Roy. Soc. Med.*, April 1909, p. 187).

defined. Sometimes a faint shadow can be seen extending half an inch beyond that edge, and it can be traced several inches up and down the shaft of the bone. The conclusion is that periostitis is present, and new bone formation has occurred (Fig. 1).

2. *Ostitis.*—Little pain may be complained of by the patient; but the screen reveals marked changes in the bones. The shaft casts a broader, denser shadow than normal; the whole length of the bone may be so affected, and no medulla can be seen. In one case both tibiae and fibulae were changed into solid pillars nearly twice as thick as usual. In other cases the thickening is local and forms a node. The cause is usually inherited syphilis.

3. *Osteoma.*—This peculiar condition was rarely met with, and then only by accident. One patient complained of his left shoulder, and it was found that the humerus was fractured at the surgical neck; but below that point the screen showed a long outgrowth like a small knob attached by a narrow pedicle to the shaft of the humerus (Fig. 2).

4. *Osteosarcoma.*—Several cases of this disease were examined, and they presented features of special interest.

One man had bruised his shoulder by pushing a large stone: a few weeks later a swelling appeared. On screen examination the clavicle looked very peculiar. Near its middle there was a transparent area; round this, at a little distance, was a shadowy ring: while both ends of the bone showed signs of periostitis. Osteosarcoma was diagnosed, causing the absorption of bone in the middle and growth of new bone round it. The clavicle was removed by Mr. Price, and microscopical examination confirmed the diagnosis.

Another man was lifting a moderate weight when he felt his arm snap. The screen showed an oblique fracture of the humerus near its lower end. But the bone at that place, and for several inches above, was much thickened, and the outline was very irregular. It suggested the presence of osteosarcoma, causing spontaneous fracture.

5. *Osteomyelitis.*—Early cases of this disease present a very similar appearance on the screen, but careful examination reveals the shaft—probably necrosed—in the middle of the new bone formation.

II. Now take those cases where the bones cast less shadow than normal. They were very numerous.

6. *Caries.*—The history is usually a painful swelling of some

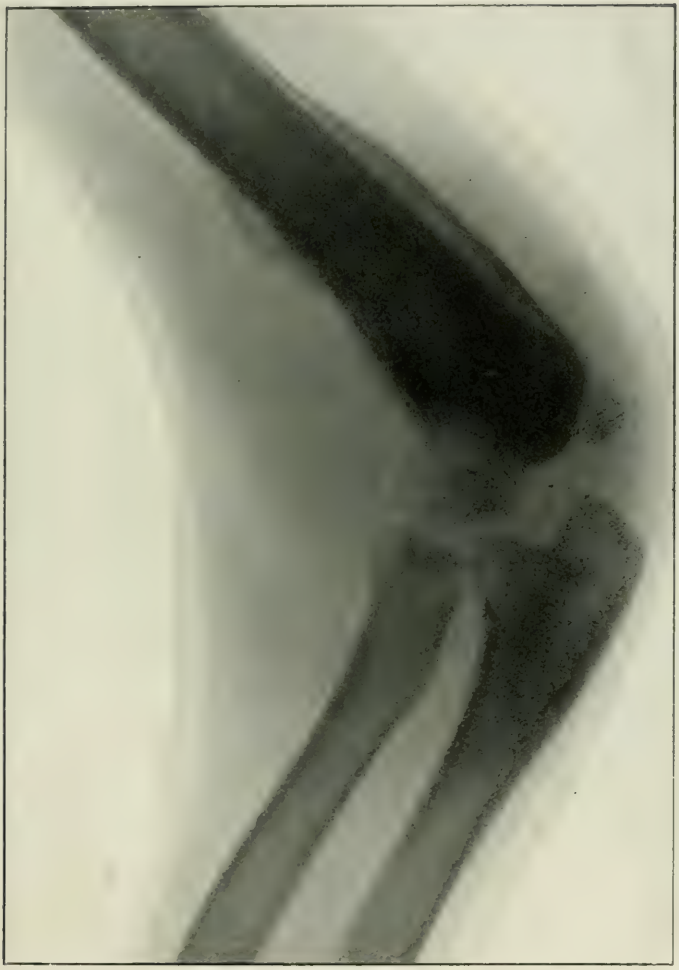

Fig. 1.—A. W., aged 9. Periostitis of humerus (lower end).

Fig. 2.—A. D., aged 9. Osteomyelitis of left humerus near the shoulder.

Fig. 3. W. B., aged 18. Caries of ulna.

Fig. 4.—C. W., aged 69. Sequestrum at upper end of humerus, with periostitis. History of pain for some months.

Fig. 7.—Mrs. S., aged 61. Gumma of first phalanx of second toe of left foot.

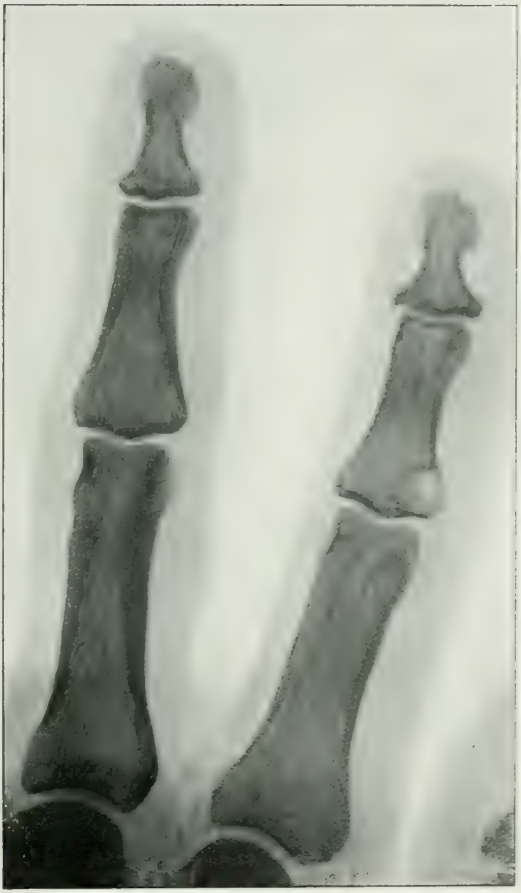

FIG. 6.—B. S., aged 34. Osseous cyst in second phalanx of index finger due to a blow from a cricket ball.

Fig. 7.—A. L., aged 39. Atrophy of the bones of the hand due to fracture of radius and ulna. (Ulna wired.)

Fig. 8.—J. C., aged 39. Caries of tarsals (left foot) with telescoping of the distal row.

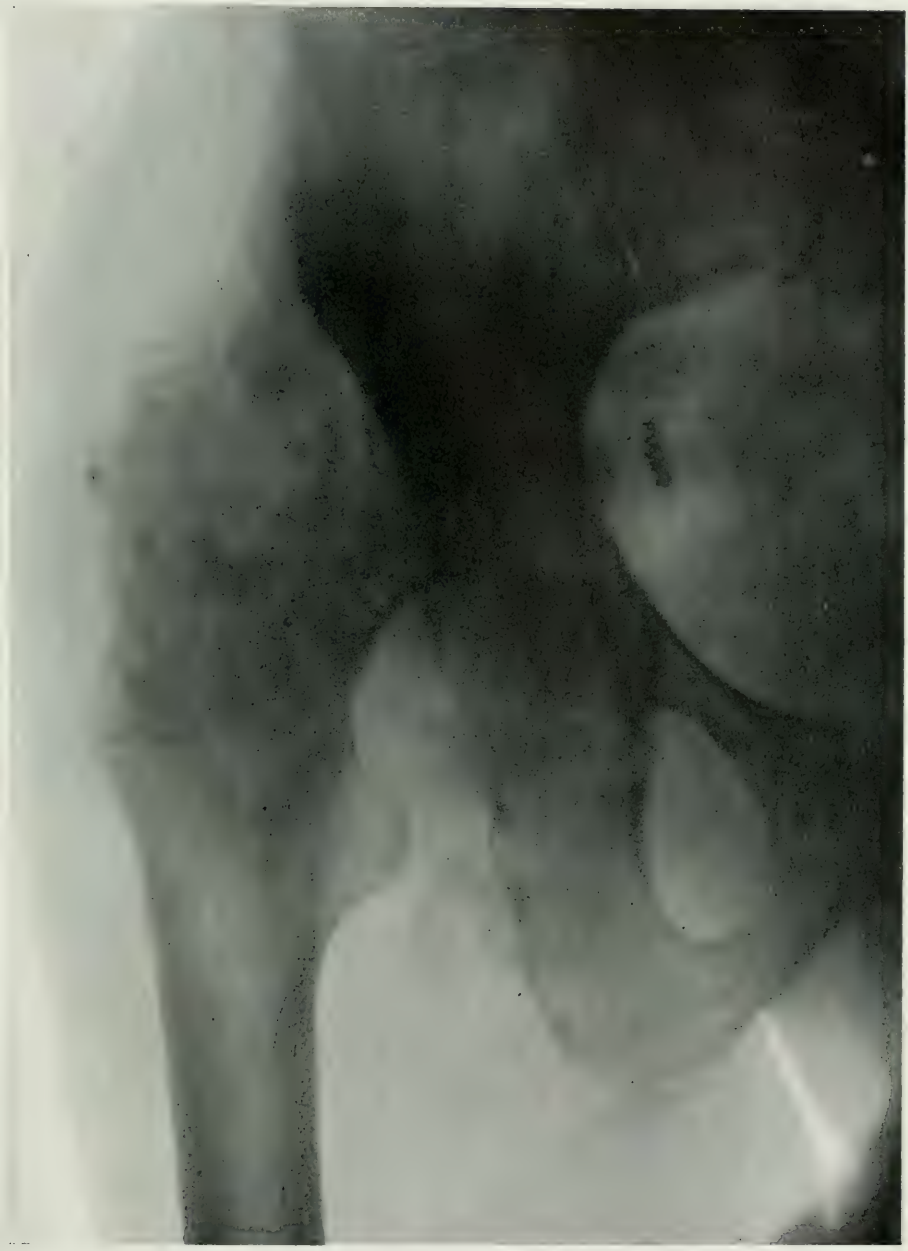

Fig. 9.—Mrs. W., aged 40. Tubercular disease of right hip (front view). History of pain for one year.

weeks' duration. Screen examination shows at once some defect in the bone. Sometimes it is merely a corner of bone transparent; or the whole shaft may present a worm-eaten appearance (Fig. 3), or the shaft may form a sequestrum, and lie inside a mass of new bone (Fig. 4). When this occurs in the metacarpals or phalanges, it causes the dactylitis that is so frequently seen in ill-nourished children.

Most of these cases were tubercular, but a few were syphilitic, and in one the gumma causing absorption of bone was easily seen (Fig. 5).

7. *Bone Cysts.*—Only a few of these were observed. The tibia at its proximal or distal end is a favourite site, and the screen showed a clear circular spot, surrounded by the darker bony shadow. One was discovered by chance in the phalanx of a cricketer, who remembered being hit by a ball near the spot (Fig. 6).

8. *General Atrophy of Bones.*—Many cases of chronic joint disease showed this condition, which is sometimes due to acute inflammation, but more frequently to the inactivity caused by the joint pain. In some cases the lessened density occurs only at the ends of the long bones; in others the whole bone is more transparent than normal, and the margins have a curious "pencilled outline."

One patient showed this well. He had sustained fracture of both bones of the forearm, with involvement of the nerves there. On screen examination, all the bones of the wrist and hand had transparent ends and "pencilled outlines" (Fig. 7).

Diseases of the joints may be placed in one of two classes, according as the adjacent bones appear normal or show changes on the screen.

III. Recent joint disease causing synovitis alone shows little abnormal on the screen. There may be a greater separation of the bones, due to increase of synovial fluid, but the bones are unchanged. Occasionally in elderly patients well-marked calcified arteries may be seen.

After a few weeks, however, changes may be expected. The bones forming the joint lose their normal clear shadows. The outline becomes blurred: the texture of the bone cannot be made out; it appears as if seen through a mist. Sir W. Watson Cheyne has well described such a condition: "The X-ray photograph does not show very well; there is a general blurring of the whole thing" (*Practitioner*, January 1910, p. 6). This description is true

but the fault lies in the joint and not in the negative or the X-ray worker.

IV. After a few months the characteristic signs of caries can be detected, with gradual destruction of the bones. Thus, in one case the distal row of tarsal bones, becoming carious, were crushed out of shape, and the astragalus touched the metatarsals (Fig. 8).

In other cases the bony outgrowths of osteoarthritis and the calcareous nodules of gout are easily seen.

Tuberculous disease of the hip can be observed in all its stages. First the upper end of the femur becomes very transparent; then some parts vanish altogether, while others get darker, so a mottled appearance results; lastly, the head of the bone (now reduced to half its normal size) slips out of the acetabulum, which also shows signs of disease, and rests on the dorsum ilii (Fig. 9).

An X-ray examination is of great importance in all chronic diseases of the bones and joints. If a good negative has been taken, it should show the fine structure of the bone, and whether it is normal or presents signs of periostitis, or caries, or tumour formation. It also should show the extent of the lesion, and whether sequestra are present, and their size and position.

Hence also the value of an X-ray examination as a guide for treatment. If, in a case of joint mischief, it is seen that the bones are not affected, some local infective condition may be suspected, the removal of which may be followed by complete recovery.

If, however, the bone is altered, as shown by a patch of caries, or a central softening, or the presence of a sequestrum, the surgeon can decide how best to remove the mischief.

Again, if local periostitis or general osteitis be seen, the question of prescribing iodides would be suggested.

Further, the progress of the case can easily be watched by means of the X-rays. The new formation of bone after removal of a necrosed shaft, the return to normal density of the bones of a foot recovering from joint mischief; or, on the other hand, the spread of caries, or of a malignant tumour in the bone (where operation is refused), can be plainly seen.

There are few cases of bone or joint disease on which the X-rays cannot throw fresh light for diagnosis, prognosis, and treatment.

TWO CASES OF UTERUS BICORNIS.[1]

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MALFORMATIONS of the uterus cannot be said to be of frequent occurrence, and it is therefore something of a coincidence that I should have met with two cases of the same type within a week of each other. Curiously enough, both were seen on account of complications following pregnancy, although these could not be attributed directly to the malformation of the uterus.

CASE I.—The first case was that of a woman, æt. 26, whom I saw in the country on 15th December 1909. She had had a full-time child eight months previously; the labour had been an easy one, and nothing abnormal had apparently been noted at the time. She was nursing the child, and menstruation had been in abeyance except for a slight discharge of blood at the third month. The presence of morning sickness at the sixth month of lactation led the patient to conclude that she was again pregnant. Four weeks after the beginning of this sickness she had a severe vaginal hæmorrhage, and something came away. She did not call in the doctor till six days later, when he found her with a very fœtid hæmorrhagic vaginal discharge, and on examination detected a piece of necrotic tissue hanging from the cervix, and a band of tissue stretching across the roof of the vagina, which he thought might have been produced as the result of laceration of the vaginal vault. I saw her the following morning, and found the uterus large and soft, the cervix patent, and the discharge very fœtid. She was therefore anæsthetised and put in the lithotomy position in order to clear out the uterus. It was then found that the band in the vagina was a piece of tissue, somewhat thick below but with a thinner, sharper edge above, which passed from the anterior wall of the vagina close to the roof and slightly to the left of the middle line to a corresponding point on the posterior vaginal wall. It hung down in the vaginal cavity like a festoon, so that with the finger hooked round it it could be brought down to the vulvar orifice. The cervical canal was dilated, and across the external os another thinner band of tissue

[1] Read before the Edinburgh Obstetrical Society.

stretched. A quantity of fœtid decidual debris was cleared out of the uterus, and in the course of this procedure the finger in the cervical canal slipped into another smaller cavity to the left of the one containing the remains of the abortion. This proved to be the left half of a double uterus. The forefinger could be passed right up to the fundus, and with the middle finger in the right pregnant half each could be moved separately, and on bimanual examination the fingers of the abdominal hand could be placed between the two and depressed as far as their junction at the os internum. No attempt was made to detach any decidua, if such were still present, from the left half, as the surface felt perfectly smooth and normal.

The patient made a rapid recovery, and when I examined her a month later there was no discharge. The band in the vagina was not so lax, the external os was divided antero-posteriorly by the thin band, and on bimanual examination the uterus felt broad from side to side, but it was with difficulty that one could satisfy oneself as to the exact outline of each half. I had not an opportunity of passing the sound. She informed me that menstruation had always been perfectly regular every month, and that there had been no menstruation during her first pregnancy or during lactation, except for a slight discharge at the third month.

This, then, is evidently a case of uterus bicornis with the division down to the os internum, with one cervical canal, but the external os divided into two lateral halves by a septum, and with the remains of the septum still present in the vagina.

Case II.—The second case was a Cowgate Dispensary patient, 30 years of age, who had had three full-time children after normal and easy labours. Menstruation had always been regular, of 28-day type, moderate in quantity. There had been no menstruation during her pregnancies or lactations. She was delivered of her fourth child on 22nd December 1909. The labour was easy, but efforts to expel the placenta failed, and the doctor sent for me because of this and because the presence of a hard swelling which he detected to the left of the fundus made him fear some further complication. It was found that the internal os or a part of the uterine wall above it was firmly contracted, so the patient was anæsthetised, and with some difficulty I introduced my hand. The placenta was still attached to the uterine wall, but easily separated and delivered. It was then found that the swelling to the left of the fundus was the left half

of a double uterus. The finger could be introduced into it easily through an opening to the left of the middle line. This opening, at first, felt as if situated in the vaginal roof, but further exploration proved it to be within the cervical canal, which was so dilated as to be flush with the vaginal vault. With one finger in the right half of the uterus from which the placenta had been removed, and the other in the left non-pregnant half, each could be moved separately, and the division between them defined down to the os internum with the abdominal hand.

The patient made a good recovery, and I have had the opportunity of examining her since. Nothing abnormal can be detected in the cervix, but on bimanual examination two bodies can be felt, one lying to the front and slightly to the right of the middle line, the other to the back and slightly to the left. The uterine sound readily passes into the right uterine cavity, and with a little manipulation of the point inside the cervical canal it can be passed to the back and left into the left cavity. With the sound the left half can be lifted to the front so as to be accessible for bimanual examination, but it again falls back when the sound is withdrawn. The length of each cavity is a little over $2\frac{1}{2}$ inches.

This case is therefore also one of uterus bicornis, with the division extending as far as the internal os, and with one cervical canal and external os. It differs from the first in the absence of any remains of the vaginal septum or band across the os externum. Both patients had had perfectly normal menstruation, and both had had normal full-time labours. In neither case had the abnormality been detected previously, and on the occasion of my seeing them both had had a pregnancy in the right half of the uterus. In both the non-pregnant half was enlarged, and the internal os sufficiently dilated to admit the finger. This seems to be the rule in such cases, and Pozzi states that the non-pregnant horn contracts actively during labour.

The uterus bicornis appears to interfere very little with the fertility of the patient, and it seldom gives rise to any trouble at labour except in those cases in which the pregnancy is in an occluded horn, as in that recorded by Angus Macdonald in vol. x. of the Society's *Transactions*. Macgregor (*Journ. of Obstet. and Gynæc. of the Brit. Emp.*, 1906, ix. p. 336), in a valuable paper, has tabulated 100 cases of double uterus collected from the literature between the years 1835 and 1906. Of these 70 were in married women, and 56 of them had had pregnancies, 44 going to

full time and 12 aborting. These 44 women had had 96 labours. The details of all the labours are not given, but it is noted that two were terminated by Cæsarean section, two by hysterectomy, four by forceps, and thirty-six naturally. Pozzi (*Traité de Gynécologie*, Paris, 1907) states that the only difficulty likely to be met with is retardation of the presenting part by the peritoneal band, which stretches from the back of the bladder to the front of the rectum between the two halves. He refers to the frequency with which the abnormality is entirely overlooked. Abram Brothers (*Amer. Journ. of Obstet.*, January 1910) records a case of double uterus associated with pyosalpinx on one side, which he mistook for a tubal gestation, and this is a mistake which might readily arise in a case with the physical signs presented by the second of my cases, the one half of the uterus being mistaken for the extra-uterine sac. These cases of uterus bicornis may therefore have a very practical obstetric and surgical interest in addition to the purely embryological one.

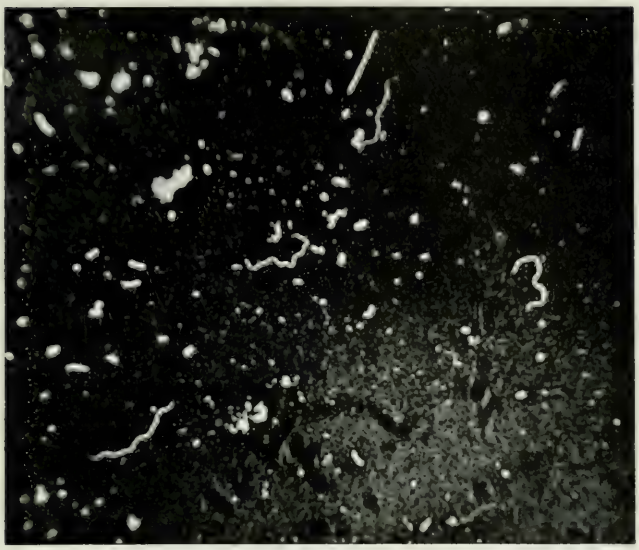

FIG. 1.—Photomicrograph (by Wm. Watson, enlarged) of sprochætes and other organisms, in a film from the throat, in Vincent's angina. (Burri's method.)

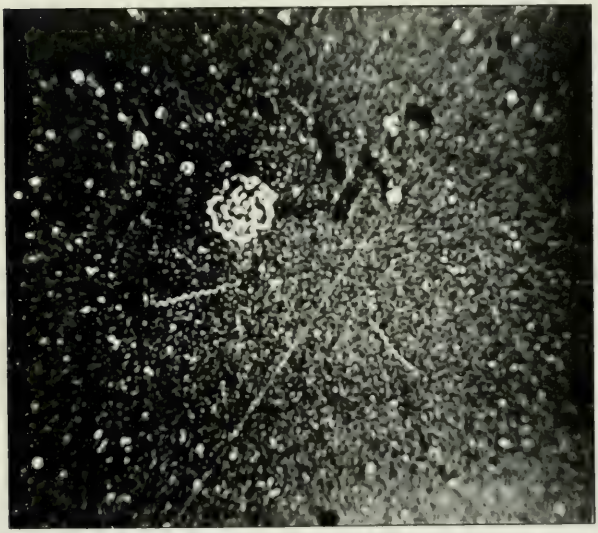

FIG. 2.—Photomicrograph (by Wm. Watson, enlarged) of sprochæta pallida, in film from primary sore. (Burri's method.)

RECENT WORK ON THE DIAGNOSIS OF EARLY SYPHILIS.

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THE demonstration of Schaudinn's Spirochæte is of importance in confirming the clinical diagnosis of syphilis in the primary and secondary stages of the disease, just as Wassermann's reaction and its allies are of use in the later tertiary manifestations. A negative Wassermann's reaction, according to Scholtz (*Deut. med. Wochenschr.*, 1910, No. 5, S. 215), gives a 90 to 95 per cent. probability against the case being syphilitic. It must, however, be remembered that this reaction is only of slight value for the diagnosis of primary affections, the reaction being usually negative during the early weeks.

For the early diagnosis by demonstration of the spirochæte, two methods have hitherto been available—(1) *Staining* methods, Leishman's, Giemsa's, and others of like nature; and (2) the method of *dark-ground illumination* to which the term ultra-microscopic demonstration has been, though not quite accurately applied. To these is now added a third, which is very simple. It consists in mixing the fluid containing the spirochætes with Indian ink, and spreading it out in a thin layer on the surface of a slide. Microscopically, the ink produces a dark background against which the spirochætes stand out sharply as unstained colourless elements.

Burri (*Das Tuscheverfärben:* Gustav Fischer, Jena, 1909) obtained his idea of using Indian ink for these purposes by following out Hansen's method of obtaining pure cultures of the yeasts used in the manufacture of beer. The large size of these yeasts enabled Hansen, with the aid of the microscope, to isolate single cells. He placed a thin layer of suitably diluted culture on the surface of nutrient media, on the under surface of a cover glass, and then with the microscope found spots where single organisms lay. These were marked, and from day to day he was enabled to watch the method of growth, and so with absolute certainty to obtain pure cultures.

One may here note, as Plaut pointed out (*Münch. med. Wochenschr.*, 1909, No. 46, S. 2394), that the development on gelatine plates of bacterial colonies out of individual cells, had been followed even at an earlier date—1874—by Oskar Brefeld.

Burri claims that the certainty attained by his method is greater than that attained by Koch's plate method, seeing that it is possible that what appears to be a single colony may develop out of more than one cell on the surface of media prepared by Koch's methods. He attempted to follow out Hansen's method in investigation of a series of strains of *bacillus coli communis*, and found that these organisms were with great difficulty distinguished from minute particles present in the culture media. He employed at first various additional methods without success, and later used gelatine, mixing the bacteria with finely pulverised magnesium carbonate, and later staining them with methylene blue. None of these methods were successful, and finally he adopted the plan of adding a certain amount of Indian ink to the watery bacterial emulsion, which he then dispersed over a sterile gelatine plate in minute drops, upon which he placed a clean cover-glass. He marked the spots which contained single bacteria, and followed their development from day to day. When certain that a pure colony had developed, the cover-glass was raised and culture media inoculated from the affected drop. As an outcome of this method, he conceived the idea of using the same material for the demonstration of micro-organisms on the surface of slides. He found that, by mixing thin dilutions of cultures or of body fluids with Indian ink and spreading the mixture in a thin film on a slide, he could make the organisms contained stand out as clear, colourless elements against a dark background, the effect being similar to that obtained by dark ground illumination. He found that not only were the preparations very easily and quickly made, but also that the actual demonstration of the organisms occupied less time than when these were examined by the ordinary staining methods. The layer of ink surrounding such minute organisms must be extremely thin, not more than 0·5 μ.

The method employed was as follows:—Liquid Indian ink as ordinarily retailed is diluted about one part in six or ten volumes of distilled water, sterilised in test tubes and allowed to sediment for two weeks. The slides used must be absolutely clean and free from fat. The culture material or the serous body fluid is suspended in a drop of sterile water. A small platinum loopful of this suspension mixed intimately with a small drop of the ink is spread in as thin a layer as possible on the surface of a slide and allowed to dry. This may then be examined directly with the oil immersion lens, or covered with a No. 1 cover glass, a drop of cedar oil being used as mounting medium. Burri's results were

uniformly good, the picture obtained resembling a photographic negative in the darkness of the background and clearness with which the micro-organisms stood out. He examined many bacteria, and with ease demonstrated the spirochæte of syphilis.

Hecht and Wilenko (*Wien. klin. Wochenschr.*, 1909, xxii., No. 26, S. 932) employed Burri's method, especially for the investigation for the spirochæta pallida, and used the method according to the description just given, except that they insisted that a cover glass must not be used. They diluted as much fluid as could be taken up from the syphilitic lesion with a platinum loop (1 mm. in diameter), and diluted this in one or several large droplets of tap water. Of this dilution a small loopful was very quickly mixed on another slide with a very small droplet (1 mm. in diameter) of ink, the mixture spread in a thin layer and allowed to dry. In addition to demonstrating spirochætes from fresh lesions, they found that these could also be demonstrated in material scraped from syphilitic organs which had been preserved in 10 per cent. formalin. They concluded that in ease of application and of demonstration the method was much preferable to staining and silver methods.

Gins (*Centralb. für Bakt.*, Jena, Abth. 1. Orig. 1909, Bd. 52, H. 5, S. 620) also investigated Burri's method. He employed both Grübler's ink and that made by Günther Wagner. He came to the conclusion that a one in ten dilution produced too thin a layer and that a half strength of ink was the best. By this method he demonstrated with great ease the *spirochæta pallida*, the spirochæte of recurrent fever, of Vincent's angina, trypanosomes, and many bacteria. The flagella of bacteria were too fine to be demonstrated. He also found that he could demonstrate small pseudopodia in leucocytes and long processes attached to blood platelets. Very clear photographs accompany the papers by Burri and by Gins.

Plaut (*Berl. klin. Wochenschr.*, 1909, No. 50, S. 2276) found that he could readily distinguish between spirochæta pallida, dentium, and refringens, their peculiarities being readily brought out by the method. Frühwald (*Berl. klin. Wochenschr.*, 1909, No. 47, S. 2121) and Rosenhauer (*Münch. med. Wochenschr.*, 1909, No. 46, S. 2394) also employed the method, but made no alteration in the technique.

The method is one which deserves attention from its ease of application and the readiness with which organisms can be demonstrated. It is extremely easy, for example, to demon-

strate the spiral and fusiform micro-organisms which occur in such great numbers in Vincent's angina. The demonstration of the syphilitic spirochaete, owing to the fact of its being so minute, is not so easily carried out, and my experience so far does not lead me to call this with Hecht and Wilenko the "general practitioners' method" of demonstrating this organism, but a little practice and careful attention to the details of the method, particularly in respect of the dilution of the material to be examined and the prolonged sedimentation of the diluted ink, so as to obtain as uniform a background as possible, lead to success. If, on examination, the background is coarsely granular the preparation should be thrown aside as useless. The background should be almost homogeneous, and of a light brown colour. When these details have been attended to it is found that the demonstration even of the *spirochæta pallida* is easier and requires expenditure of a much shorter time than, for example, the employment of Giemsa's or Leishman's staining methods demands. It is essential that no local treatment have been applied. The sore is cleansed with sterile wool, its margin scraped with a sharp spoon, and when bleeding has stopped, films are prepared from the serous fluid which exudes, according to the slightly modified method adopted by Gins, which I have found to be the most satisfactory.

The method is certainly of much easier application than the method of dark ground illumination, which necessitates extra apparatus and a considerable amount of experience in its use.

CLINICAL RECORDS.

A CASE OF INTESTINAL CONCRETION.[1]

By T. MACHARDY, M.B.,
Cullen.

An enterolith is a concretion found within the lumen of the intestine, and is a pathological condition of great rarity. My purpose, therefore, in publishing these notes is not so much the consideration of any diagnostic value they may possess, as the pleasure of submitting to you a pathological specimen which, in the experience of the majority of medical practitioners, must be unique. Not that I desire to deprecate the importance (an importance which may be vital to the patient) of making a positive diagnosis in such a case. Protracted suffering localised in the abdomen is often associated in the minds of patients and, not infrequently, of the physician, with the haunting dread of malignancy. If therefore, in such circumstances, we are unable to convince the sufferer of the source and nature of his troubles, we will in all probability be denied the opportunity, through the aid of surgery, of restoring to him his health, or at least of prolonging his life.

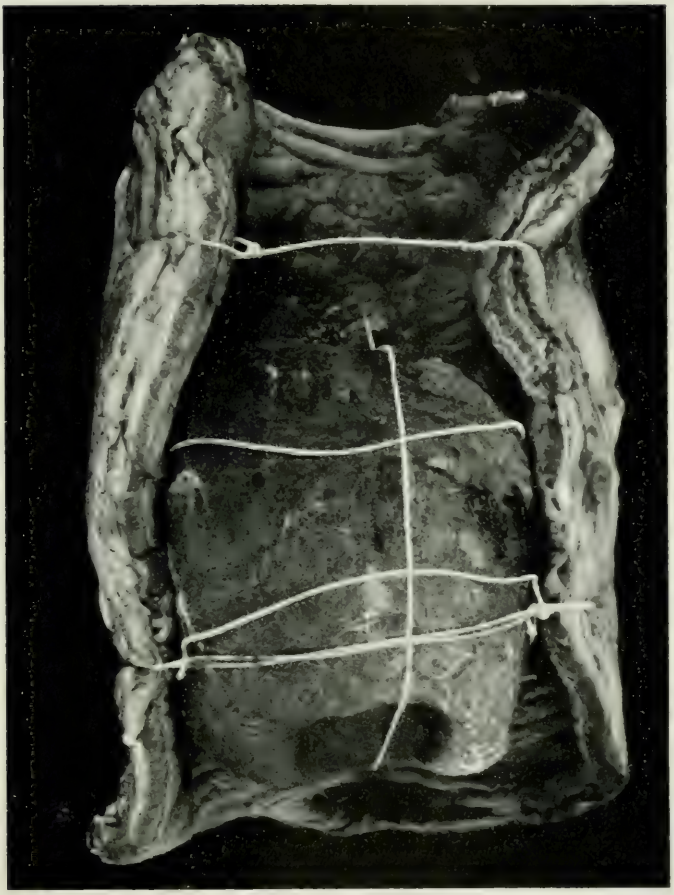
In the present case my diagnostic difficulties were largely discounted by the clear and intelligent history given by my patient. Robust and athletic in youth, with a strong passion for horseflesh, he early in life forsook the more prosaic duties of a bank clerk and, to follow the trend of his natural inclinations, enlisted in the Dragoon Guards. His service there, however, extended over but a few years, when he was invalided in consequence of what was described as chronic diarrhœa. The course and history of that illness permit me to venture the suggestion that the correct designation of the invalidity was chronic enteritis, or, as some of you may perhaps prefer it, ulcerative enteritis, a suggestion which receives additional support from the subsequent history of the case. During the twenty years that intervened between them and the date of these notes, these primary symptoms continued, but in a more or less subdued form. His fæcal discharges numbered six or seven daily and, in recent years at least, they were largely of a watery character, with a total absence of mucus and blood; they occurred most frequently during the afternoon and evening, and invariably two or three hours after the ingestion of food. There was a total cessation during the night. The passage of flatus was rare; but the desire to defæcate was constant, and although the presence of intestinal

[1] Read before the Northern Counties Branch, British Medical Association, on 30th October 1909

obstruction was unmistakable there was an absence throughout the long history of the case of the usually prominent symptoms of sickness or vomiting. His liveliest memories cling around events occurring at irregular intervals when all his more latent symptoms seemed suddenly to assume a state of great activity, prostrating him for days, and gradually subsiding after the passage of a concretion such as we see here. Those concretions, as far as his recollection served him, numbered four in all. One of them, he claims, was as large as a turkey's egg. The first was passed in 1897, the last three years ago. Following these events, life quickly assumed a brighter aspect, and with the return of flesh and strength came the ability to resume his duties on his farm.

When I first saw him his general condition was that of advanced emaciation ; the tongue was red and "hacked," the abdomen distended and tympanitic, with a pronounced peristaltic movement, typical of obstruction of the small intestine ("ladder pattern"). This movement he asserted was inconstant, and only associated with the passage of food, a statement which I was able to confirm later. His diarrhœa had then increased in frequency, and there was total anorexia. Under his direction an examination of the abdomen revealed the presence of a hard, rounded substance lying in the neighbourhood of the lower end of the ileum, immediately above Poupart's ligament. Per rectum, the mass was more easily reached and better appreciated. Several weeks passed and many examinations were made before I could again locate this most elusive body. On this occasion I was afforded an excellent opportunity of ascertaining its size and shape, its sharply-defined outline, its consistence and mobility—facts which, taken with the history of the case, permitted of little speculation regarding its nature. Assured of this, the patient consented to enter the Aberdeen Royal Infirmary, under the care of Mr. Gray, who successfully removed this concretion, which I now show. Mr. Gray subsequently wrote to say that the concretion so completely occupied the lumen of the bowel that it was a mystery to him how fæces, even in a liquid state, were able to pass : and so extensive were the internal ulceration and the external adhesions that he found it necessary to remove 13 inches of the bowel. On the mesenteric side the concretion had almost completed a perforation, and on the opposite side was an ulcer about the size of a florin. The divided bowel was joined by an end-to-end suture.

After his return the patient rapidly regained health, and he assured me nine months afterwards that, with the exception of an occasional painless diarrhœa, not a single symptom of his former condition remained. About this time he contracted catarrhal influenza, which laid the foundation of a phthisis, to which he succumbed six months later. Phthisis, I should state, is a very marked hereditary taint in the family history.



Enterolith in situ.

With the pathology of these concretions it is unnecessary here to occupy your time. You may better supplement your knowledge by a reference to text-books or other literature; but such literature, so far as my investigations go, is of the most meagre kind. Most writers agree that these bodies are usually composed of fæcal material, with a mixture of phosphates of lime and magnesia, but what the proportion of these chemicals relative to the fæces or to one another may be is not stated. They may be composed, in the first instance, of masses of hair, husks of corn, &c., and in some cases the accumulation takes place around a gall-stone. To my mind, a much more interesting speculation is their cause and mode of growth.

The photograph shows the enterolith *in situ*.

A CASE OF TIC, OR POSSIBLY AN OCCUPATION NEUROSIS.

By R. A. FLEMING, M.D., F.R.C.P.,
Assistant-Physician, The Royal Infirmary.

THE patient, K. B., æt. 32, a clerk by profession, came complaining of a peculiar spasm of the muscles of the left side of the neck, which tended to draw the head to the left side. There is no constancy about the exact direction of movement. Sometimes the chin is pressed down on the chest, sometimes it is tilted up into the air much like a case of spasmodic wryneck. The spasm is tonic and not clonic. First induced by writing, it began to come on when reading, and eventually even when the patient was walking on the street. The spasm is unaccompanied by pain, although some stiffness may be felt in the participating muscles. The spasm is easily checked; the slightest pressure of the hand or even the turned-up collar of the coat prevents its occurrence. The duration is about nine months. In March last it began very slightly. In June, after a period when it was less troublesome, it became worse again, and for the past twelve weeks patient has been off work.

The health otherwise has been good. No illness or mental worry precipitated the attack, and there is nothing of importance in the family history. Patient attributes the onset of the spasm to a habit he gradually acquired of writing with his head tilted to the left side, and he is certainly of nervous temperament.

It is probably a case of tic, although it seems to me to be appropriately termed an occupation neurosis.

The treatment adopted for the first four weeks after the patient was sent to me by Dr. Cumming was rest from reading or writing, plenty of open air, and a tonic. Thereafter, as no improvement resulted, slow rhythmic exercises, designed to call into play *all* the muscles of the

neck, were commenced. These were carried out for ten minutes thrice daily, and the number of minutes of exercise were increased to a maximum of thirty minutes on each of the three occasions. Under this treatment the patient has learned to walk without any tendency to deviation of the head, and there is less spasm when he attempts to read or write. For the past two weeks the patient has had applications of sinusoidal currents at Dr. Dawson Turner's suggestion, and his improvement has certainly continued, if not much more rapidly, at least steadily.

The patient is to return to work in a fortnight's time, but is to keep up the exercises for at least half an hour morning and night.

CASE OF STONE IN HEPATIC DUCT, SUBSEQUENT TO CHOLECYSTENTEROSTOMY PERFORMED FOR STRICTURE OF COMMON BILE DUCT.

By ALEXANDER MILES, F.R.C.S.,
Surgeon to The Royal Infirmary.

THE subject of this report is a married woman, Mrs. P., whose illness began in June 1905, when she was 37 years of age. A month after her last confinement, from which she had made a very slow recovery, she was suddenly attacked with severe pain in the right hypochondrium, shooting through to the back, and accompanied by shivering and vomiting. The pain lasted for about five hours, and the following day she was distinctly jaundiced. For the next four months she had similar seizures once, and sometimes twice, a week, each attack being followed by some degree of jaundice. During each attack the abdomen became distended; the stools were pale in colour, and the urine was dark. In this period she lost half a stone in weight, and her general health was poor.

Cholecystotomy.—In September 1905 she was admitted to one of the surgical wards, and the gall-bladder was explored through a vertical incision over the outer edge of the right rectus. It was greatly distended with bile, but contained no gall-stones, and no concretions could be discovered in the biliary passages. There were few adhesions about the gall-bladder, but some of the lymphatic glands in the gastro-hepatic omentum were enlarged. There was nothing to suggest the presence of malignant disease. The gall-bladder was drained. The attacks of biliary colic ceased, and the patient left hospital in about four weeks. The fistula, however, did not close, and two months later she returned with a view to having something done to relieve her of the discomfort caused by the constant escape of bile.

Cholecystenterostomy.—On 10th November 1905, I performed a

cholecystenterostomy. An incision was made half an inch to the left of the scar, in the centre of which was the fistulous opening. The fibres of the rectus were separated and the peritoneum opened, exposing the inner side of the gall-bladder, which was of considerable size and had very thick walls. The opening of the fistula was encircled by an incision, and the gall-bladder freed from the abdominal wall. The opening was clamped and purified with pure carbolic acid. As the gall-bladder lay close to the duodenum, it was an easy matter to establish a lateral anastomosis between the two, which was done by a double row of silk sutures, without the aid of clamps or artificial support in the form of button or bobbin. The opening made admitted the little finger easily. Before the fistulous opening was closed the gall-bladder and cystic duct were explored, but no stone was found. An attempt was made to explore the common bile duct, but the result was not satisfactory. The fistulous opening was then closed by a Czerny-Lembert suture, and a convenient tag of omentum was fixed over the stump and along the line of anastomosis. The abdomen was closed without drainage. In the course of a few days the stools were well coloured with bile, and the patient made a good recovery, and left hospital much improved in health in about three weeks.

For the next four years she was free of biliary trouble and enjoyed good health, but on the afternoon of the 2nd September 1909, she was suddenly seized with severe pain, beginning in the epigastrium and right hypochondrium, and shooting through to the back. The pain continued till about eleven o'clock at night, and during this time she vomited frequently. She then fell asleep, and slept well all night. In the morning she was free of pain, but in the forenoon she had an attack of shivering and vomiting. It was noticed that she was jaundiced, and the yellow colour lasted for some days, during which time her urine was dark and her stools light in colour.

Five weeks later she had a similar attack, and a fortnight after this another. From that time till she returned to hospital, a period of nearly three months, she had attacks varying in severity every week or ten days. In the later attacks the pain was less severe and only lasted for an hour or two; occasionally the attack was represented merely by a fit of shivering without pain or vomiting. The jaundice, however, became persistent, and the stools were clay-coloured, and during the last two months she suffered greatly from itching of the skin.

On her admission to Ward 5, she was intensely jaundiced, and the region of the gall-bladder was very tender. The muscles, particularly in the upper segment of the abdomen, were so rigidly contracted that it was impossible to palpate the region. For five days the temperature remained subnormal, and the pulse between 89 and 92. The skin was dry; the bowels moved regularly; the

stools were clay-coloured, but after a dose of calomel they showed signs of bile. The urine was acid, contained mucus, urates and bile; specific gravity, 1022; Cammidge's pancreatic reaction was absent.

On the evening of the sixth day in hospital the patient had a severe attack of biliary colic, ushered in by a rigor, the temperature rose to 102·6° F., and the pulse to 104. The pain lasted for some hours, and the attack left her greatly exhausted.

It was evident that the onflow of bile was again interfered with, but it was difficult to determine whether this was due to closure of the opening made between the gall-bladder and the duodenum, or to occlusion of the biliary passage above the entrance to the cystic duct by a freshly-formed concretion. The absence of symptoms for four years made it appear unlikely that the recurrence was due to a stone in the common duct, which had been overlooked at the previous operations.

Removal of Stone from Hepatic Duct.—On the 4th of February 1910 the abdomen was opened by an incision through the scars left by the previous operations. With some difficulty the gall-bladder was recognised buried among adhesions, and after these had been separated the cystic duct was traced to the common duct, which felt like a hard fibrous cord. To the right of the cystic duct an elongated calculus, about the size and shape of a date-stone, could be palpated and made to move in the hepatic duct. The gall-bladder was then opened on its right aspect, away from the duodenum, and an unsuccessful attempt made to remove the stone by this route. The hepatic duct was then opened directly and the stone extracted with a scoop. The first part of the common duct was found dilated, and a director passed along it was arrested by what appeared to be a fibrous stricture. No attempt was made to suture the hepatic duct, but a small glass tube was passed down to the opening in it, and this was packed round with gauze in the form of a cigarette drain. Before the gall-bladder was closed the cholecystenterostomy opening was examined, and was found to be quite patent, admitting easily the little finger. The abdominal wound was closed, except where the glass tube emerged, and to this a rubber tube was attached and carried into a bottle outside the dressing. For the first few days a large quantity of bile escaped by the tube and a little by the gauze packing. Four days after the operation the urine was free of bile and the jaundice was beginning to pass off. The stools, however, were still clay-coloured. The cigarette drains were removed on the fourth day, the glass tube on the ninth. After this the motions began to show traces of bile, and gradually regained their normal colour. The fistula closed in about a week; the patient was out of bed on the twentieth day and left hospital three days later. She has since remained well, and the jaundice has completely disappeared.

The points of clinical interest in this case appear to be :—(1) The sudden onset of severe biliary colic in a comparatively young woman, who had previously been free of liver symptoms, and the frequency of the attacks which followed. (2) The occlusion of the common bile duct without any history pointing to the existence of an impacted stone, or to such persistent cholangitis as would lead to a cicatricial stenosis. (3) The absence of gall-stones in the gall-bladder or common duct at the time of the first two operations. (4) The relief which followed cholecystenterostomy. (5) The persistence of the tendency to cholelithiasis in spite of a free channel for the bile to the intestine, as shown by the formation of a concretion in the hepatic duct four years after the cholecystenterostomy had been performed. This seems to indicate the continued administration of such drugs as euonymin, podophylin or calomel, to prevent concentration of the bile after operations for cholecystitis or gall-stones. (6) It was satisfactory to find four years after the operation that the cholecystenterostomy opening was as wide as when it was made.

OBITUARY.

JOHN SMITH, M.D., F.R.C.S., LL.D.

On 15th April 1910, in his 87th year, this able, venerated and gifted man passed away after months of weariness and exhaustion, not much pained, but very weary. It is difficult to write about him without appearing to overdo the praises which come into the heart. In many respects this modest and retiring man deserves a very high eulogium, though he would be the last to expect it or believe it. Born in 1825, he studied medicine with the view of practising as a medical man, but the sudden death of his father directed his attention to dentistry, and he took up that branch from necessity.

At the time he began dentistry was in a poor state. Anyone could practise it; there was no special education for it; and most of it was in the hands of ignorant people possessed of skill simply derived from experience in pulling teeth, often with instruments of the coarsest kind One or two of the better class of dentists were medical men who had taken up that branch of the profession, but most were uneducated and irresponsible. The hour had come and the man. Smith saw what was wanted, and never rested till, with the Royal College of Surgeons at his back, he had started a dental dispensary, and, after long labour, had arranged for a dental diploma and put his profession on an assured basis. It is in great measure due to his labours that we now in Edinburgh have an excellent Dental Hospital and School, where candidates can procure a first-rate education in dentistry. There is

a dental diploma given by the Royal College of Surgeons after a very full examination by a board of examiners, who are half selected from practising dentists and half appointed by the College. In the labours of this Board Dr. Smith to the last took the deepest interest; all the arrangements were supervised by himself, and one of the greatest interests of his later life was to examine the students and to arrange every detail, however trifling, with the officer of the College. The present sitting of the Examiners has missed for the first time his guiding hand. His influence has been all for good. At the first inception of the diploma he was keen that mercy should be shown to the unaccustomed pupils, but year after year he saw how to raise the standard of knowledge. He always held that any dentist should, if possible, hold a medical degree, but till this is accomplished he did all he could to raise the standard.

To Dr. Smith also may be given the credit of starting in Edinburgh a Sick Children's Hospital. A letter he wrote to the *Scotsman* on the subject of the necessity for such a hospital over the signature of "Sigma" attracted much attention. A meeting of philanthropists was held in his house, 11 Wemyss Place. From that beginning, the present splendid hospital took its rise, and Edinburgh is indebted to Dr. Smith for the start of one of its most useful charities. In his own branch Dr. Smith was acknowledged as its head in Edinburgh and Scotland. He was a wise dentist; many a tooth was saved by his good advice. He did not run after new theories, and all his dealings with the mouths of his patients were governed by shrewd sense and practical wisdom. His professional career was sweetened and gladdened by his never-failing courtesy and consideration. It was impossible that he could have a professional enemy, and many a time his influence was used to smooth difficulties and to heal disputes. So far briefly as to Smith's professional life; but there are many points in his history and character which need to be touched on if the man is to be understood. He and Sir Henry Littlejohn, after graduating in 1847, went to Paris to study, and they had the opportunity of seeing the street fighting in Paris for four days in 1848. Of what they saw much use was made. They learned much of gunshot and sabre wounds, and the numerous sketches made by Smith helped to illustrate the lectures of his friend Spence.

Once settled in Edinburgh, the leisure of the evenings of a dentist gave him the power of uniting in all the varied forms of musical, literary and dramatic work that were to be found. He knew all the best actors, and could appreciate and enjoy their work. He joined the best musical circles with his violin, on which he was a first-rate performer. It was known in theatrical circles that Smith wrote three pantomimes for the Theatre Royal and the dramatised version of "Waverley" which was played at the Scott Centenary.

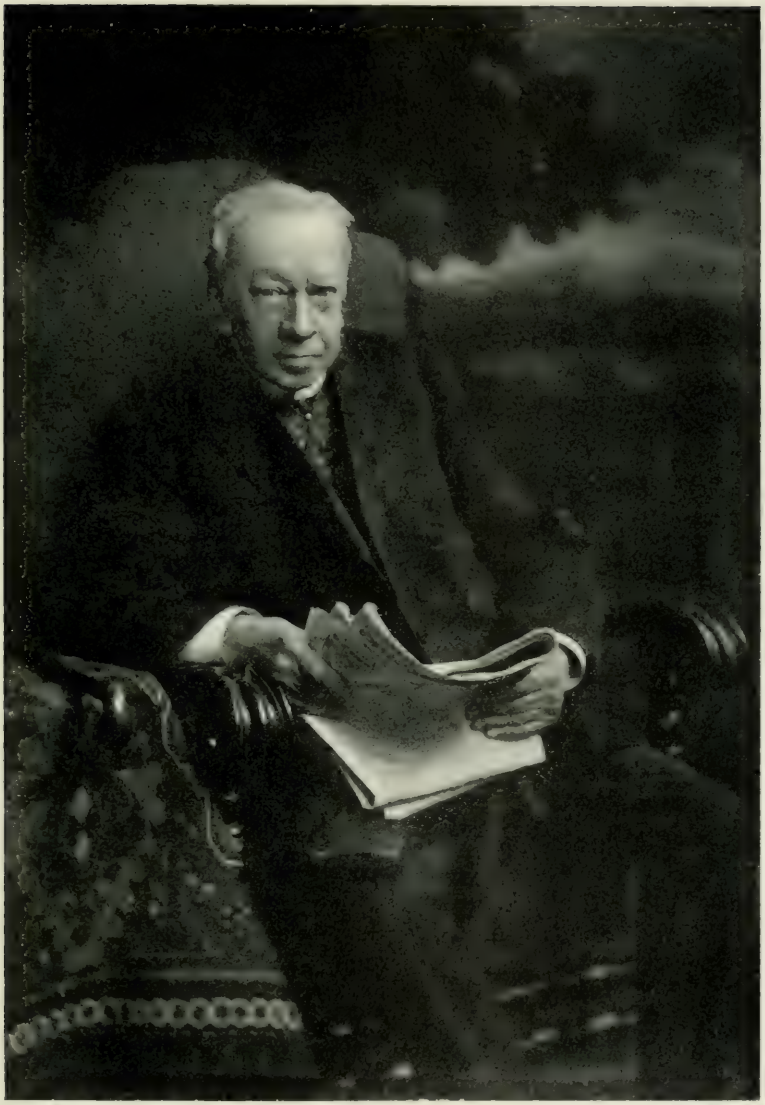


Photo by Sowerby Watson] *[Edinburgh.*

DR. JOHN SMITH.

To the convivial clubs of his own profession Dr. Smith was "decus et tutamen." Secretary for a long time to the Æsculapian, his presence and his minutes were the great feature of the after-dinner. Modest and quiet, he never forced himself forward; his minutes seemed to require pressure to bring them out, but they were perfect. Perhaps not always painfully accurate, they always reflected the tone and temper of the day; full of humour, the personal allusions never gave pain or wounded anyone. It was a sad day for the Æsculapian when age and increasing deafness made him give up the secretaryship. He resigned its membership within the last three months, and at the last meeting he was unanimously appointed an honorary member, and was requested to come to the meetings whenever he could. The writer of this had the pleasure of telling him this by writing it on his slate, and he was much pleased.

In Smith's younger days he was a capital shot and a great fisher. A member of the Nest, his visits there were much prized.

He had a great turn for drawing; his sketches were exceedingly clever. In his young days he did much work for some of his brethren, notably for Professor Spence. In his old age, when he had time, he took to painting in oils, and two very clever paintings of Queen Mary's days are practically finished—one, last year, of the conspirators coming into her room to kill Rizzio, is very beautiful. He went down to Holyrood and painted the room on the spot.

Dr. Smith was a good citizen, a Conservative, and a member of the Church of Scotland. He has been for many years senior elder of St. Andrew's Church.

He was a loyal servant of his College. He was President, and at the tercentenary of the University received the honour of LL.D. He was the first dentist to occupy the presidential chair. He was for many years an Examiner and a member of the Council.

He has survived most of his old friends; but Sir Henry Littlejohn, his oldest professional friend, remains to mourn his loss. He was attended in his last days by his wife of fifty-five years and his faithful manservant. Dr. Muirhead's kindness and attention were a great pleasure to him. J. B.

MEETINGS OF SOCIETIES.

Edinburgh Obstetrical Society.

THE fifth meeting of the session was held on Wednesday, 9th March, Dr. Haultain, President, in the chair.

The President showed a large tumour of the labium majus, which was probably mostly of the nature of a lipoma.

Mr. N. T. Brewis showed (*a*) Tristan's modification of Assilini's

forceps: (*b*) calculus removed from bladder of patient who was operated on for pyosalpinx sixteen years ago, the nucleus of the calculus being a silk stitch used at the operation: (*c*) an example of torsion of the tube: (*d*) double pyosalpinx, probably gonorrhœal, right side causing acute symptoms resembling appendicitis, left side quiescent.

Dr. J. M. Munro Kerr read a paper on "The Importance of Removing the Uterus in Certain Diseased Conditions of the Adnexa." He first referred to the necessity of conservative surgery when that was at all possible in diseased conditions of the uterus and appendages. He then discussed the desirability of radical operative procedures in cases in which the adnexa were hopelessly diseased. He believed in such cases it was undesirable to leave the uterus behind. The two diseases of the adnexa to which he specially referred were malignant disease of the ovaries and pyosalpinx.

As regards malignant disease of the ovaries, he pointed out how unsurgical it was to leave the uterus behind. It was generally accepted now that in malignant disease the operation should be as radical as possible. He referred to several cases in support of this contention.

As regards double pyosalpinx, he considered it advisable that the uterus should be removed along with the pus tubes, for the following reasons:—(1) The diseased tubes could be more satisfactorily removed if the uterus were also taken away; (2) by removing the uterus along with the appendages there was less likelihood of the tubes being burst during the operation; (3) in not a few cases where the tubes only were removed the uterus caused trouble, and a subsequent operation for its removal became necessary.

Dr. Munro Kerr finally referred to the importance of dealing thoroughly with any bowel that might be injured. He believed it was better to resect the portion of bowel badly injured rather than try and patch it up. He mentioned in this connection a case recently operated upon where both tubes and ovaries were removed, along with a very much injured cæcum. The patient was now perfectly well.

As regards results, Dr. Munro Kerr stated that when it was his custom simply to remove pus tubes he had a maternal mortality of 10 per cent., but during the last two or three years, since the more radical treatment was adopted, neither he nor his assistant, Dr. Dickie, have had any maternal deaths.

Discussion.—Professor Sir Halliday Croom said he entirely homologated Dr. Munro Kerr's ideas, and congratulated him on his dexterous surgery in the cases recorded.

Dr. Barbour asked how far was Dr. Munro Kerr to apply his principles. A malignant ovary had only very rarely similar disease of the uterus in association with it. In papilloma of the ovary,

apparently malignant, was one to remove the uterus? Recurrence in such cases was more often in the peritoneum than in the uterus. In pyosalpinx was future infection the risk to be feared by leaving the uterus, or was it the discomfort afterwards from the heavy uterus? In large double cases one was almost obliged to remove the uterus. One hesitated to remove a uterus where the tubes were infected for fear of thus exposing the cellular tissue to fresh risk of infection. Was it a question of size of tube, of ease of operation, or what was it that determined whether to remove uterus or not? And why not do it in all cases of pus tubes if we were to apply the principle?

Mr. Brewis said the final results were better when the uterus was removed. In malignant disease confined to one ovary recurrence might not occur after its removal, but as a matter of principle it was better to remove the other ovary and uterus, because metastatic deposit did sometimes occur in the endometrium. In bilateral ovarian carcinoma the prognosis was very bad even after the removal of both sides, because the disease was often metastatic from the intestine or stomach. The removal of the uterus was not so essential in pyosalpinx cases, except as a matter of better technique. As most cases were gonococcal, and usually sterile, the entire removal of the tubes was sufficient, but in tubercular cases the endometrium was liable to be infected, and removal of the uterus was called for.

Dr. Fordyce said that, as far as technique was concerned, he fully recognised the value of working down on one side, and then, after removing the uterus, working upwards on the other side. He agreed with Dr. Brewis that in most cases the pus in pyosalpinx was sterile. He did not go so far as Dr. Munro Kerr about the treatment of bowel; he would hesitate about removing it in any case where it was possible to cover the raw area, as the tendency to recuperate after injury was so great. In answer to Dr. Barbour's query, he would say to remove the uterus in all cases where a large raw surface would otherwise be left on its posterior aspect as this would probably give trouble later. In such cases, if pus had not escaped, he would remove the uterus, but not in cases where pus had been spilt, because of the increased surface for septic infection. He could not see how malignant disease of one ovary demanded removal of the uterus; other structures nearer the ovary would stand in more need of removal.

Mr. E. Scott Carmichael said that recent experiments had not gone to support the theory of the specific functions attributed to the uterus. There was no question that removal of the uterus rendered the operation easier. He agreed with Dr. Munro Kerr that it was much better to resect densely adherent bowel than to leave a large raw surface, with the danger of post-operative paralysis and perforation.

The President remarked on the great interest of the paper and the

discussion, but could not enter upon the points raised, as Dr. Munro Kerr had to leave.

In replying, Dr. Munro Kerr said he had only on two occasions seen malignant disease of the uterus associated with malignant disease of the ovary, but other observers had clearly shown the results to be better when the uterus was removed. With regard to the question of opening up the broad ligament, the rupture of a pyosalpinx did not occur often, and in such cases the sooner one was done working in the abdomen, and the less swabbing and washing out, the better. The uterus was undoubtedly useless if left. He strongly disagreed with Dr. Fordyce about the treatment of damaged bowel, and held that the gynæcologist *must* resect it; it was not surgical to leave it.

Dr. B. P. Watson read a short paper on "Two Cases of Uterus Bicornis," which appears on p. 431.

Professor Sir Halliday Croom recalled several cases similar to those recorded by Dr. Watson. In one, three days after the complete delivery of a four months' hydatid mole, what looked like a cast of the uterus was passed, and was found to be an actual decidual cast. On later examination a double uterus with complete cleft was found. On two occasions Sir Halliday Croom had operated for extra-uterine pregnancy, and found the condition to be pregnancy in one horn of a uterus bicornis. Every symptom of extra-uterine gestation had been present, including a decidual cast.

Dr. Barbour remarked on two cases of such rarity having come under Dr. Watson's notice in one week. It was interesting that neither woman menstruated during pregnancy, and there was no evidence of decidual casts being expelled from the non-pregnant cavity.

Dr. Fordyce inquired if it were usual for septate cases to go to full time; his experience was that they aborted.

The President referred to four cases within his recollection. In one case, very like one of Dr. Watson's, there was great difficulty in arriving at a diagnosis, and whilst one continental specialist held the condition to be one of extra-uterine gestation, Dr. Haultain felt convinced that it was an intra-uterine condition, basing his firm conviction on the softening and hardening of the swelling under palpation. The latter view was subsequently confirmed after the patient aborted and a double uterus was found. In another case he had to operate for the severe pain of retained menses within one horn. In another case he was operating to suspend a retroverted uterus and found it to be two-horned, the split being only slight. In another case he removed, for severe dysmenorrhœa without menstrual discharge, an undeveloped double uterus with well-developed ovaries.

Dr. Watson, in replying, said that of 56 women with a two-

horned uterus who had had children 12 had aborted. The frequency of abortion in such cases was acknowledged.

The Secretary read a short note on "A Case of Antenatal Lobar Pneumonia" by Dr. Alexander Don, Dundee.

The baby, a male, was born at full time after a normal labour about 9 P.M. Forceps were applied when the head was on the perineum, and the baby was born with membranes intact, these being divided with scissors. The baby did not cry, and when slapped coughed up a brownish mucous material, which excited comment at the time, as discharges could not have been swallowed. In spite of rubbing and slapping the cry remained feeble. When lifted by the nurse about midnight she found it blue in appearance and the breathing laboured. After rubbing and giving hot water and whisky, things were no better when Dr. Don was summoned at 2 A.M. The child was evidently pained, and whined with each respiration.

He found the lower half of the left side of chest dull, and over it were heard moist crackling râles and pleuritic friction, extending forwards to the cardiac area. The nurse showed him more brownish matter that had been coughed up. Some simple remedies were tried, but the child's condition got steadily worse, and it died the same afternoon at five o'clock. A swab of mucus taken immediately after death by the nurse from the child's mouth was reported on by Professor Sutherland as follows:—"Pneumococci are present in large numbers in cultures incubated overnight. There are also a few colonies of staphylococci. No streptococci are found."

Dr. Don added a few particulars and comments. The mother was 37, free from disease; father also healthy. No suspicion of syphilis. Mother had suffered from what she called heartburn and bilious turns with vomiting during her pregnancy. Four days before the birth she was much upset by a younger child falling out of bed, and she herself felt very cold and shivery before she got lying down again. Two days later she had a return of this cold, shivery feeling. She felt very little movement for four days before the event. She had no knowledge of having been near any case of pneumonia, and had no cough herself. In the literature of the subject, Dr. Ballantyne's *Antenatal Pathology* referred to cases where both child and mother had suffered from pneumonia, but only one case in which the pneumococcus was found in the peritoneal cavity, in the spleen, and in the blood, and where there was no illness of the mother during pregnancy.

The President remarked on the extreme rarity of the condition and the difficulty of accounting for the source of infection.

Forfarshire Medical Association.

A MEETING of the Society was held in Dundee on Thursday, 3rd March, at 8.30 P.M., Dr. R. C. Buist in the chair.

Dr. Foggie showed the specimen of a large aneurysm of the transverse and descending aorta in which the vertebræ from the third to the sixth dorsal were eroded where the sac was attached. The cause of death was direct rupture of the sac with passage of hæmorrhage upwards to the neck where it spread amongst the neck muscles, and downwards along an interval made between the retro-pharyngeal fascia and the pre-vertebral fascia, through the œsophageal opening of the diaphragm on to the subserous coat of the stomach.

Dr. Buist showed a specimen of cancer of the cervix. The uterus was removed by abdominal operation, and along with it several enlarged glands in the pelvis.

Dr. Mackie Whyte gave a lively account of his experiences as a patient "before and after gastro-enterostomy." His stomach troubles had lasted since 1899, and had been at first intermittent but latterly almost constant. His dyspeptic symptoms were explained by the triad of hyperacidity, pyloric stenosis, and dilatation.

Many remedies were tried, and from most of them some temporary good was obtained. Careful dieting, rest after meals, syphonage, and alkalies helped him to keep fairly steadily at work till August 1908. The occasional marked remission of distress under some such cause as a holiday, a change in the line of treatment, or sudden improvement without obvious reason had showed the presence of a nervous factor gaining ground for hope of ultimate recovery without operation. But at last this was found to be unavoidable.

Mr. Greig did a posterior gastro-enterostomy on the no-loop method, and the result, after 18 months' trial, had been perfect. Dr. Whyte gave some details as to the effects of the anæsthetic, the help from morphia during the first few days, and the convalescence. The diagnosis was confirmed by inspection at the operation. There was no sign of duodenal or gastric ulcer.

Dr. Scroggie, who had quite recently undergone the same operation for a similar complaint—pyloric stenosis with dilatation of many years' standing—also spoke briefly on his experiences, and expressed himself as more than satisfied with the result of the operation.

Dr. Pirie read a paper on "Diseases of Bones and Joints" as demonstrated by X-rays, which appears on p. 427.

A MEETING of the above Society was held in Dundee on Friday, 1st April, at 4 P.M., Professor Kynoch in the chair.

The chairman exhibited a series of photographs illustrating various tumours of the vulva:—(1) A sarcoma of the clitoris with secondary

glands in the groin; (2) a congenital fibro-lipoma; (3) an unusally large Bartolinian cyst; (4) an epithelioma of a prolapsed uterus; (5) cicatricial contraction of the vulva. He also showed specimens of: (*a*) cancer of the cervix; (*b*) cystic degeneration of a uterine fibroid; (*c*) adeno-carcinoma of the ovary; (*d*) a small fibroid which, impacted in the pelvis, had caused constant retention of urine.

Mr. Greig showed a cast of the leg of a child with congenital abscess of the fibula, with a radiogram from the same case; a cast from a case of syndactylism, with radiogram. He also showed a number of photographs: — (1) Intra-cystic papilloma of breast; (2) melanotic sarcoma of cheek; (3) anal condylomata in an infant; (4) striæ atrophicæ, well marked; (5) unusual case of spina bifida; (6) hydrocephalus and meningitis, with spina bifida; (7) illustration of the progression adopted by a boy with multiple tuberculous arthritis. He then showed stereoscopic photographs:—(1) Showing case after entire excision of the tongue for carcinoma; (2) cystic sarcoma of the leg; (3) congenital mixed tumour from the naso-frontal region of an infant; (4) epithelial carcinoma in the external auditory meatus. Mr. Greig then showed two cases of Volkmann's ischæmic contracture. The first was that of a boy aged five years, who had fractured the middle of the shaft of his right femur. The second was a boy aged eighteen who had fractured both bones of his right forearm. He read in detail notes of the two cases.

Mr. Price read notes of five cases of post-operative intestinal paresis treated by subcutaneous injections of infundibular extract. The cases consisted of two of suppurative appendicitis with general peritonitis, two cases of strangulated femoral hernia (no gangrene of the bowel), and a case of carcinoma of the cæcum, which was excised. All the cases developed intestinal paresis, and it was impossible to get the bowels moved or flatus passed by means of calomel or enemata. The cases were then treated with the infundibular extract with satisfactory results.

RECENT LITERATURE.

CRITICAL SUMMARIES AND ABSTRACTS.

MEDICINE.

By J. S. FOWLER, M.D., F.R.C.P.,
Physician, Royal Hospital for Sick Children, Edinburgh.

Recent Work on Anterior Poliomyelitis.

Acute anterior poliomyelitis at the present time occupies much the same position in current medical literature as cerebro-spinal meningitis did two or three years ago. In both cases the occurrence of epidemics has afforded opportunities for the study of the disease by modern methods, and, in addition to a fuller knowledge of the clinical features and varieties of anterior poliomyelitis, sufficient has been discovered concerning its nature to justify the belief that in future text-books of medicine it will find a definite place among the infectious diseases, as well as to lead to the hope that a specific curative or preventive treatment may one day become available.

The epidemiology and clinical features of anterior poliomyelitis were summarised in this *Journal* a year ago (May 1909), and to the description there given there is little to add. Epidemics have also been reported from Pomerania by Peiper—57 cases, with a mortality of 11·7 per cent.—and in Upminster by Treves. The general characteristics of the epidemic disease resemble those of epidemic meningitis, children are affected to a larger extent than adults; direct contagion can seldom, if ever, be proved; single cases, sometimes groups of two or three, occur in a home; the mode of spread is suggestive of the existence of healthy infection carriers; abortive and aberrant types are common. The chief difference is the seasonal one, meningitis being a disease of cold weather, poliomyelitis a disease of summer. In addition to these points of similarity to meningitis, anterior poliomyelitis, looked at from the pathological point of view, bears some resemblances to the disease hydrophobia.

Transmission of the Disease to Animals.—The experimental infection of lower animals has engaged the study of a number of workers, most prominent among whom are Flexner and Lewis, Levaditi and Landsteiner, Romer, Krause and Meinicke, and Popper.

Nature of the Virus.—The infective agent used is an emulsion made from the spinal cord of an acute case of poliomyelitis, and the animal which is by far the most susceptible is the ape. Flexner failed

to infect rabbits, guinea-pigs, horses, calves, goats, pigs, sheep, rats, mice, dogs, or cats, and although Krause and Meinicke appear to have carried on a successful series of subinoculations in rabbits, most workers have used only monkeys in their experiments. Krause and Meinicke, also, have obtained results with virus from a number of different tissues—spleen, liver, blood, and lumbar puncture fluid, and in this respect seems to have been more fortunate than most other observers. In his earlier papers Flexner deals with the serial infection of apes. Using an emulsion of spinal cord, and injecting it into the subdural space, he easily transmitted the disease from monkey to monkey. He also succeeded in carrying out successful subinoculations into the sciatic nerve of a series of monkeys. A point of some interest in connection with the mode of infection is that the paralytic symptoms depend to a certain extent on the site of inoculation. Animals inoculated in the sciatic nerve become paralysed in the hind legs. Intra-cerebral inoculation tends to cause paralysis of the anterior part of the body. In this respect the virus behaves like the poison of tetanus. Paralysis occurs in four or five days, or after a somewhat longer period up to seventeen, twenty, or even forty-six days after inoculation. The disease is fatal in about 40 per cent. of the animals; some recover with typical residual paralysis. It is agreed on all hands that the pathological changes are identical with those of human anterior poliomyelitis. One of the most important facts about the virus is that it passes through a Berkfeld filter, and is not, therefore, one of the ordinary micro-organisms. It resists glycerination, as does the virus of rabies, and retains its virulence unimpaired on being kept frozen at -4° C. for four days, or at 4° C. for fifty days. A spinal cord which was kept dry over caustic potash for a week also remained virulent. The possibility of a filtrate through a Berkfeld filter being virulent on account of its containing soluble toxins rather than a living organism has been excluded by the transmission of the disease by the spinal cords of apes which had succumbed to inoculation with a filtrate. Flexner has made some experiments suggesting the possibility of cultivating the virus outside the body. He found that on inoculating bouillon containing rabbit serum or human ascitic fluid with portions of bacteria-free filtrate, turbidity developed. A monkey inoculated with the turbid fluid developed paralysis on the thirteenth day. None of the turbid fluids contained bacteria which could be detected by the microscope, or under the dark field microscope. The distribution of the virus in the body of patients dying of acute poliomyelitis is not known. It is not certain whether it is present in the blood in acute cases. The disease has been transmitted by using an emulsion of lymphatic glands from animals, and from a human case. The cerebro-spinal fluid of an acute case does not appear to contain the virus in an active state. (Cf. Meinicke's results, *supra*.)

While intra-cerebral and intra-neural injections are the most certain methods of inoculation, infection has been produced by various other channels—injection into veins, into the anterior chamber of the eye, into the peritoneum, and into the pleura. Subcutaneous injection appears to succeed comparatively seldom.

Possible Paths of Infection.—The nasopharynx being probably the site of entry and escape of the diplococcus intracellularis, Flexner experimented on inoculation at this site. He found that an emulsion of spinal cord from a recently paralysed monkey brought in contact with the scarified nasal mucous membrane of another monkey produced the disease. He also found that the mucous membrane of recently paralysed monkeys, infected through other channels, contains the virus. It would, therefore, seem that the infective agent of anterior poliomyelitis may be eliminated by, and possibly enter through, the nasal mucous membrane. Leiner and Wiesner have succeeded in transmitting the disease by feeding, and through the respiratory organs—by inhalation, by inunction of the nasal mucous membrane, and by intra-tracheal inoculation. Their results are in so far an advance on Flexner's that they were at pains not to abrade the mucous membrane of the parts inoculated. They noted a relation between the site of inoculation and paralysis. The paralysis appears near the site chosen, whence it would appear that the virus reaches the cord by the shortest route, perhaps along the nerves. In cases of intra-cerebral inoculations the paralysis often develops on the opposite side of the body.

Immunity.—In the human subject anterior poliomyelitis confers immunity. Wickmann, in his enormous experience of the disease in Sweden, never saw a second attack in the same person. In the same way, apes which have been inoculated and survive, exhibit in many cases immunity to reinoculation. Leiner and Wiesner noted this acquirement of active immunity as early as the second day after the onset of the paralysis. Flexner obtained it on the seventeenth day, and Levaditi from the twelfth to the twenty-fifth day. Romer and Joseph, however, think that a somewhat longer time is required for its development. Up to the seventeenth day they found evidence of hyper-susceptibility, and only procured immunity after the twenty-fourth to the thirty-third day.

Analogies to Rabies.—1. The cord lesion recalls the perivascular infiltration which is characteristic of rabies. 2. The filterability of the virus. 3. The greater certainty of intra-cerebral and intra-venous as compared with other methods of inoculation. 4. The course of the paralysis, suggesting a propagation of the virus in the nervous system. 5. Bonhoff regards as characteristic of anterior poliomyelitis small inclusions in the nuclei of the glial cells. These are surrounded by a clear zone, stain only by means of Mann's stain or Lentz's modifica-

tion, and resemble the negri bodies of rabies. Important differences between the two infections exist:—(1) Poliomyelitis is only transmissible to apes, rabies to all mammals. (2) Poliomyelitis virus can be cultivated *in vitro* (Flexner).

Changes in Cerebro-Spinal Fluid.—In his study of inoculation into the brain, Flexner investigated the changes which occur in the cerebro-spinal fluid during the incubation period. When a considerable dose of filtrate is injected the cerebro-spinal fluid withdrawn at the end of twenty-four hours is normal in amount, but contains many small cells with polyform nuclei. In seventy-two hours mononuclear cells preponderate, and the fluid is opalescent. On the day of the paralysis the fluid is only slightly cloudy, and contains a mixture of large and small lymphoid cells, and a few cells with polyform nuclei. These findings show that cellular changes begin in the meninges immediately after injection of a filtrate, and these persist for several days before the onset of the paralysis. If these results were confirmed in human cases we would have at our disposal a valuable means of diagnosing abortive and aberrant types of poliomyelitis. An abrupt change in the nature of the cerebro-spinal fluid, from being opalescent, rich in cells, and spontaneously coagulable just before, or at the time of the paralysis, to a more limpid fluid, poorer in cells, often occurs.

Attempts at Protective Immunisation.—Several workers have published accounts of attempts to produce immunity otherwise than by subjecting animals to an attack of the disease. Levaditi failed with cords heated to 56° C., and has employed dried cords, on the analogy of the Pasteur treatment of rabies, inoculating successively with tissue dried for 9, 6, 5, 4, and 3 days. Flexner's observation that virus resists drying for a week would seem to cast doubt on the feasibility of this method. Romer produced immunity by subcutaneous injection of virus, but the method is not free from danger, as it seems that in some cases, though rarely, the disease has been transmitted to apes by this channel. Romer and Joseph have failed to detect antibodies in the blood-serum or cerebro-spinal fluid of infected animals by the complement fixation method. They state, however, that the serum of immune apes neutralises virus *in vitro*. Analogy with rabies, however, forbids our hoping much from this observation, for a serum which will neutralise rabies virus *in vitro* is useless curatively. Flexner found that the simultaneous subcutaneous inoculation of heated cord did not affect the course of events after an intra-cerebral inoculation of virus. Krause states that he has produced immunity by subcutaneous inoculations of virus containing 5 per cent. of carbolic acid.

In connection with the epidemicity of the disease the question has arisen whether any similar disease affects domestic animals. Epidemics of paralysis among fowls have been reported by Starr and Wickmann

in districts where anterior poliomyelitis was prevalent. The nature of this paralysis, however, is not known.

LITERATURE.

Krause and Meinicke, *Deuts. med. Wochenschr.*, 7th April 1910.

Flexner and Lewis, *Journ. Amer. Med. Assoc.*, 13th November, 4th December, 18th December 1909, 1st January, 12th February, 2nd April 1910.

Levaditi and Landsteiner, *Comptes rendus*, 29th November 1909.

Calmette and Breton, *L'Echo méd. du Nord.*, 6th February 1910.

Romer and Joseph, *Münch. med. Wochenschr.*, 15th February, 8th March, 15th March 1910.

Bonhoff, *Deuts. med. Wochenschr.*, 24th March 1910.

Peiper, *Deuts. med. Wochenschr.*, 3rd March 1910.

Leiner and Wiesner, *Wien. klin. Wochenschr*, 3rd March 1910.

Treves, *Brain*, vol. xxxii., 1909.

Strauss and Huntoon, *New York Med. Journ.*, 8th January 1910.

SURGERY.

TRANSVERSE TRACHEOTOMY.

OTTO FRANCK (*Münch. med. Wochenschr.*, 8th February 1910) puts forward a strong plea for a transverse skin and tracheal incision. A transverse incision of about $1\frac{3}{4}$ inches is made over the cricoid cartilage, the skin being pinched up before being incised so as to avoid dividing the anterior jugular veins which are not raised with the skin. The head is bent backwards, and the wound gapes, especially downwards, giving a clear view of the subjacent structures. The muscles are separated mesially in the usual way. The isthmus of the thyroid gland is gently pressed down by the left index finger, and the trachea opened transversely; the tracheal wound gapes, the tube is inserted, and the skin wound stitched at both ends.

The following are the advantages claimed for this method:—The cosmetic result is greatly superior to that of the longitudinal incision, as the scar lies in the fold of the neck, the incision being one of Kocher's "normal incisions." The stitched-up parts of the skin almost invariably heal by first intention, as the secretion which is expelled from the tube does not run over them, while aseptic healing is exceptional in the longitudinal method. The exact situation of the mesial intermuscular division may be missed in the case of the longitudinal incision, but the transverse lays open the whole field. The transverse opening in the trachea obviates the difficulty of introducing the tube, for if the head be bent backwards, the tracheal wound is opened widely, and the tube is easily slipped in without the use of any instrument. When the tube is removed the tracheal rings, when the head is in normal position, fall back into place with almost mathematical

accuracy. Stenosis of the trachea is much less apt to occur as a late result of the operation. The transverse operation requires no retractors, nor any instruments except a knife and the tracheotomy tube.

W. J. Stuart.

The Treatment of General Suppurative Peritonitis.

After a very complete review of the recent literature on the treatment of general peritonitis, including all the latest experimental results and the records from numerous surgical cliniques, Bornhaupt (*St. Petersburger med. Wochenschr.*, No. 4, 1910) comes to the following conclusions:—(1) That success in the treatment of general peritonitis depends much more on the time at which the operation is undertaken than on the nature of the operative treatment. (2) In early cases, if the source of the infection be dealt with, the abdomen may safely be closed without drainage. (3) In general suppurative peritonitis douching out of the abdomen is the most rational and the best form of treatment. (4) In peritonitis affecting only the lower abdominal zone douching out is better avoided. (5) From available statistics it is found that almost equally good results are obtained by the "wet" and "dry" methods of treatment, but it is very difficult to draw conclusions, as in many of the records sufficient care has not been exercised to distinguish between cases of diffuse and those of generalised peritonitis. (6) The propriety of pouring sterile oil into the peritoneal cavity in cases of generalised peritonitis is as yet undecided. (7) The pelvis should be kept lowered during the after-treatment (the position now associated with the name of Fowler is not considered essential). (8) Rectal and intravenous infusion of saline are of great value; the addition of adrenalin to the latter is of doubtful value. (9) When intestinal paresis sets in gastric lavage is of the greatest help, but the injection of drugs, such as physostigmine, seldom does much good. Enterostomy in the hands of some surgeons has given good results.

D. P. D. Wilkie.

Gastro-Jejunal Ulcers.

Stimulated by H. J. Paterson's important contribution to the subject of jejunal ulcer (reviewed in this *Journal*, January 1910), W. J. Mayo (*Surgery, Gynecology and Obstetrics*, March 1910) has investigated all the cases of gastro-enterostomy performed by himself and his brother, to ascertain, if possible, whether jejunal ulcer has occurred as a secondary condition. Of 1141 gastro-jejunostomies, of which 715 were for duodenal or gastric ulcer, not a single case developed true jejunal ulcer, nor have they met with such in patients operated on by other surgeons. They have had three cases of the gastro-jejunal

type of ulcer which, in agreement with Paterson, they look on as a direct consequence of the operation. The first was due to a Murphy button, which had been used for the anterior gastro-jejunostomy three years previously, and had not been passed. The patient was seized with a sudden attack of abdominal distress, supposed to be appendicitis, and this was followed by symptoms of interference with the passage of food from the stomach. A tender mass was palpated just to the right of the umbilicus. On opening, they found a mass of adhesions about an ulcer which had perforated immediately above and to the right of the original gastro-enterostomy opening. The button was found lying in the stomach, and as it could be fitted into the site of the ulcer, the acute symptoms were obviously due to the button dropping into the opening. The second case was due to the retention of infected suture material. Stomach symptoms returned seven months after the gastro-enterostomy, which was a posterior operation on a nine-inch loop. On opening, they found a mass of dense adhesions, and, at one spot on the anterior margin of the anastomosis, an ulcer undermined at the inner side. Just at this point was a projection which proved to be a silk ligature in communication with the gastro-intestinal canal. The third case was due to an infected hæmatoma in the suture line of a posterior no-loop gastro-enterostomy. A small hæmatoma was formed by the pricking of a vein in the transverse meso-colon, necessitating supplementary sutures. Fifteen months later, pain and tenderness returned. On opening, they found an ulcer in the line of the anastomosis, extending into the fat of the meso-colon at the point of the former hæmatoma. On subsequent examination of the ulcer, it was found to be a cavity in the fatty tissue, not containing in its floor intestinal or gastric tissue. In the first two cases the ulcer was excised, and a large plastic gastro-jejunostomy done at the site of the opening. In the third case, the whole gastro-enterostomy opening along with the ulcer was excised, and the stomach and jejunum were closed. Then a large Finney gastro-duodenostomy was performed. Recovery took place in all the cases.

In the same *Journal* Percy describes another case of gastro-jejunal ulcer following on an anterior gastro-enterostomy performed eight years before. It was associated with great hypertrophy of the afferent and efferent loops of the jejunum, the wall being fully 2½ inches in diameter. The stomach and jejunum were freed and closed, so as to include the ulcer, and a posterior gastro-enterostomy was performed.

JAMES LOCHHEAD.

THE LOCAL APPLICATION OF RADIUM IN CANCER OF THE STOMACH.

The results of treatment of squamous epithelioma in the mucous membranes of the mouth, œsophagus, and rectum by radium emana-

tions have been sufficiently convincing to justify an attempt to treat glandular cancers in the same way.

Delbet and Herrenschmidt have investigated the effect of radium on the stomach of the dog. The effects of the rays only appear a few days after the exposure, and are limited to the mucosa in contact with or adjacent to the tube. The mucous membrane is slowly destroyed, while the submucosa and surrounding tissues are stimulated to proliferate.

Gaultier and Labey (*Gaz. des Hôp.*, 8th February 1910) describe the treatment of a cancer of the pylorus by application of the radium through a gastric fistula. The case was that of a man, æt. 49, who had recently become very emaciated, suffered from a dull constant pain in the epigastrium, and vomited frequently large quantities of foul stomach contents. A test meal showed diminution of free HCl., and a tumour was felt near the umbilicus. A diagnosis of cancer of the pylorus was made. At the operation a large tumour, of very hard consistence, was found at the pylorus. There were many adhesions, and the patient's condition negatived a resection of the growth. After a posterior gastro-enterostomy had been performed, a fold of the stomach 5 centimètres above the tumour was stitched to the peritoneum and abdominal muscles and then opened. A finger was introduced through the fistula and the tumour felt on the anterior wall of the pylorus. The mucous membrane of the fistula was stitched to the skin.

The subsequent treatment consisted in repeated applications of radium to the interior of the pylorus. A rubber sound containing a glass tube with one centigram of sulphate of radium was inserted through the fistula and placed in contact with the tumour for a period of two hours, whilst a tube containing 10 centigrams of radium was placed on the abdomen, so that the tumour was subjected to radiation from both aspects. These applications were repeated at intervals eight times during the two months following the operation. The action of the radium was to produce a hypersecretion of gastric juice, and occasionally a rise of temperature for three days.

Under the treatment the patient quickly improved; the pain and sickness disappeared, the hydrochloric acid increased in amount, and the tumour became smaller on palpation.

Eleven weeks after the first intervention the fistula was excised, the interior of the pylorus was inspected, and the tumour was found to be much reduced. The stomach was then closed. Six months later the patient was in perfect health.

The authors state that their experience is not yet sufficient to estimate the value of radium in cancer of the stomach, but they are hopeful that further experience will prove the method to be of therapeutic value.

JAMES M. GRAHAM.

Spurs of the Os Calcis.

Sarrazin (*Deut. Zeitschr. f. Chir.*, Bd. 122, p. 399) has had the opportunity, in Garrè's clinique, of observing ten cases of spurs of the os calcis, and these he illustrates by X-ray drawings. In addition, he investigated twenty-five patients chosen at random, and in three of them he found spurs which had never caused the least trouble. He also records two cases in which the spurs began to cause pain only after a sprain of the foot. In one case he was able to prove by the microscope that the spur consisted of a true exostosis, occurring as a conical outgrowth of the cortex along with the cancellous tissue of the bone. On the plantar aspect of the spur and the adjacent part of the os calcis, he found a layer of calcified fibro-cartilage, which he was inclined to look on as the transformed remnants of a bursa. The author attaches importance to this bursa in the pathology of calcanean spurs, and suggests that the pain may often be due to inflammation in it. The removal of the spur is the most certain method of treatment, but it should not be undertaken till palliative measures have failed. Of the latter, the best are small, ring-shaped air-cushions which lie under the heel.

Sarrazin is of opinion that the spurs are generally pre-existent, and are only discovered after a trauma. James Lochhead.

DISEASES OF CHILDREN.

By G. H. MELVILLE DUNLOP, M.D., F.R.C.P.,
Physician, Royal Hospital for Sick Children.

The Occurrence of Remissions and Recovery in Tuberculous Meningitis.

Dr. Alfred Martin (*Brain*, August 1909) has in this paper sifted the evidence obtainable to show that meningitis is sometimes recovered from, and that long remissions may occur during its course. He has examined and analysed the statistics of a large number of institutions for this purpose, and has not accepted for diagnostic purposes clinical symptoms alone, as he regards none of them as pathognomonic unless they are corroborated by the evidence derived from lumbar puncture or post-mortem examination. From lumbar puncture we gain the information as to (1) the tension of the cerebro-spinal fluid; (2) the appearance and chemical nature of the fluid; (3) the presence or absence of tubercle bacilli or other organisms by microscopic examination; (4) the presence of tubercle bacilli by inoculation of susceptible animals; (5) the presence of tubercle bacilli by their cultivation in special media; and

(6) the presence or absence of an excess of cell elements in the fluid and the nature of the cells where present.

These different points and their bearing upon tuberculous meningitis are then exhaustively discussed, and the writer concludes that tuberculous meningitis can only be affirmed when tubercle bacilli are discovered in the cerebro-spinal fluid by the microscope, inoculation, or culture.

The bearing of ophthalmoscopic examination of the eye as an aid to diagnosis is referred to, and the writer points out the great discrepancies of opinion amongst different observers with regard to tubercle of the choroid, Drs. Carpenter and Stephenson asserting that they discovered them in 50 per cent. of unselected cases, whereas Jessop, out of his large experience, found them present in approximately only about 2 per cent. In addition to these methods the tuberculin reaction may be of value in confirming or refuting the clinical diagnosis, and finally in cases in which there has been a long intermission, death taking place subsequently from some other disease, the post-mortem frequently shows that the previous diagnosis of tuberculous meningitis was correct. After a long critical review of the literature of the subject, the following conclusions are arrived at:—(1) That long remissions and even recoveries do occur in tuberculous meningitis; (2) that recoveries are possibly more frequent than has been believed, since no fewer than twenty undoubted cases have been recorded within recent years; (3) that in these cases either the resistance of the individual is so much greater than usual that the disease is checked early in its course, or the virulence of the bacilli is so much less than usual that the lesion in the meninges becomes localised, and later undergoes a fibrous change; (4) that the lesion in the meninges may, at a later period, form the focus of a fresh infection, which usually terminates fatally; (5) that no treatment up to the present has been discovered which has had any specific effect in promoting the favourable termination of the disease.

Mitral Stenosis in Children.

The results given in this paper have been arrived at by an examination of the post-mortem records of a sick children's hospital extending over twenty-three years. The following is a brief abstract of the paper:—One of the most striking facts is the comparative paucity of cases of mitral stenosis, for there were only 30 out of 1182 necropsies which showed definite stenosis of the mitral valve.

Mitral stenosis is very rarely seen alone in children: when present it is complicated in 96 per cent. of cases by other cardiac lesions, the commonest of which are pericarditis and mitral regurgitation.

From the point of view of morbid anatomy in children the buttonhole variety is extremely rare. Twice as many females as males are attacked, and the determining cause in the majority of cases was

either rheumatism or chorea. The greatest number of deaths occurred between the sixth and tenth year.

Œdema of the lungs is less common than either œdema of the body or ascites, although this is perhaps not so much dependent upon the condition of stenosis of the mitral valve as upon concomitant cardiac lesions. The commonest cardiac sign of mitral stenosis is in connection with presystole, either in the form of a murmur or a thrill. The systolic murmur is the next most common, whilst the diastolic murmur must be considered as a sign of a complicating lesion.

In nine out of thirty, or nearly one-third, the condition of the heart was not diagnosed correctly (*Med. Chronicle*, February 1910).

Cerebro-Spinal Meningitis.

In the *New York Medical Journal*, December 1909, Louis Fischer gives some interesting statistics regarding the New York epidemic which raged between 1905 and 1908.

Sixty-seven per cent. of these cases occurred in children under ten years of age and 15 per cent. in infants under one year. The mortality in 1906 was 78·7 per cent., in 1907 it was 77·5 per cent., and in the first half of 1908 it was 71·9 per cent. Insanitary dwellings, vitiated air, and absence of sunlight were undoubtedly factors favouring the propagation and dissemination of the germ. Three classes of cases were met with—a mild type, an abortive type, and a severe type. A positive diagnosis was made by examining the fluid drawn by lumbar puncture. As a rule the spinal fluid was turbid or opaque. The diplococcus intracellularis was always found. In rare cases the pneumococcus and the streptococcus were also found, but these latter were exceptional. The bacteriological diagnosis, according to Weichselbaum, depends on the diplococcus being Gram-negative or decolourised by Gram. Three typical cases are described, one dying and two recovering.

A decided reaction followed every injection of the serum, the pulse-rate was increased, the volume improved and the tension became higher. The leucocytes were increased with but few exceptions, showing a marked hypoleucocytosis. The polynuclear leucocytes were also increased, and the mononuclear leucocytes and the lymphocytes reduced after the serum injection. The special symptoms noted during the epidemic were extreme extension and rigidity, bulging of the fontanelle, absence of the patellar reflex, muscular pain, tache cérébrale, petechial and purpuric eruptions, high fever, and vomiting. The differential diagnosis lay between scarlet fever of a severe type, mastoiditis, and septic pneumonia confined to the apices.

A large number of infants were treated by lumbar puncture and intra-spinal injections of various drugs, with hot baths, leeches and ice-

bags to the spine, but with poor results. The introduction of Flexner's serum proved of great value, and in some instances acted like a specific healing serum in the treatment of the disease.

Flexner, in the year 1908, records that out of 393 cases 295 children, or 75 per cent., recovered, and 98 children, or 25 per cent., died.

OPHTHALMOLOGY.

By W. G. SYM, M.D., F.R.C.S.,
Ophthalmic Surgeon to the Royal Infirmary, Edinburgh.

Increased Intra-ocular Tension in Epidemic Dropsy.

The subject of glaucoma is one from which the ophthalmic surgeon can never get free, and at the present time it would be difficult to say whether its pathology or its treatment were the more discussed. Epidemic dropsy is a disease seen sometimes in India, and of the glaucoma symptoms met with in connection with it, and more particularly of the etiology of these symptoms, Maynard treats in an interesting paper. It seems that in a family, dropsy, fever, and cardiac troubles will suddenly break out, and some at least of the sufferers will complain of dimness of vision. The eyes on examination show a slightly steamy cornea, a deep or medium anterior chamber, a pupil small or moderately dilated and acting sluggishly, but there is rarely any hyperæmia. Halos are complained of, and the tension may be above normal. The halos do not appear to last for more than a few hours at a time, and are not due to conjunctival secretion. Usually the disc may be found cupped, but Bjerrum's sign is often absent. The patients are all under middle life.

Taking it for granted that the disease thus presented is glaucoma, due to epidemic dropsy, how does the rise of tension come about? It may be from increased inflow or diminished outflow. There is no sign of interference with outflow, no injection or shallowing of the anterior chamber, no appearance to suggest that the filtration angle is narrowed. Maynard's opinion is that, taking into account the cardio-vascular phenomena met with in epidemic dropsy, it is not unreasonable to attribute the symptoms to a passive congestion of the ciliary tract and consequent increased production of lymph: they fall in with Terson's theory of glaucoma as nothing more in the first instance than œdema in a closed cavity. It is noteworthy, too, that as a rule the intra-vascular pressure was found not to be high. This passive œdema and transudation of lymph into the system will be all the more likely to set up increased tension if the lymph secreted should contain more colloid than is normally the case. Maynard puts forward the sugges-

tion that an irritation of secretory nerves may be the first step in bringing this about. The cases are interesting primarily to those practising in India, but they have this importance as well, that they point, so far as they go, to hypersecretion as being the first link of the chain of causes of glaucoma, the theory which was propounded long ago, but which has rather fallen into the background of late, the majority of observers at the present time rather favouring the theory of interference with the outflow.

The Colour Fields in Cases of Brain Tumour.

If there is one eye symptom which has been regarded as more certainly hysterical or functional than any other it is inversion of the colour fields. The physiological condition is that the field for blue should be large, that for red greatly smaller; "inversion of the fields" signifies that the field for blue has become smaller than that for red. It is this symptom which, according to Bordley and Cushing (of Baltimore, U.S.A.), can no longer be regarded as always functional, if, indeed, it ever is so. For they have found this dyschromatopsia, as they call it with doubtful accuracy, to be present in the early stages of a number of cases of cerebral tumour, and even associated with a marked restriction of the whole field, which is also a "hysterical" symptom. During the last few years they have examined with great care a large number of patients suffering from cerebral tumour, and have come to certain conclusions which are worthy of serious consideration by those interested in problems of this nature. They required as a preliminary to eliminate all those patients who, from juvenility, stupidity, blindness, or other reasons, were incapable of giving a proper reaction to the test, and there remained fifty-six persons, in fifty of whom there was some alteration of the colour fields: in six only could they find (in the particular stage at which they were) none. Half of these fifty showed interlacing of the boundary lines for colour, in nine the principal feature was colour inversion, in four there was hemiachromatopsia without alteration of the form fields, in three there were islands (scotomata) of blue blindness, in three there was complete blue blindness, in one complete green blindness, and in five complete colour blindness. This symptom of complete loss of colour vision, so that the scene is like a pen-and-ink sketch or a photograph, is one which causes great inconvenience to the patient: it, in fact, interferes with sight very much more than one would at first suppose—more than a pretty severe contraction of the field.

These alterations of the colour fields are very much more frequent, according to the authors, than those of the form field; indeed, out of the whole fifty-six persons only eighteen showed form field changes. They are not dependent upon inflammatory or congestive conditions of the disc, for they have frequently been discovered prior to the exist-

ence of any ophthalmoscopic sign whatever. Another fact of great importance in respect of prognosis is that out of forty-two cases examined subsequently to operation, some radical, some palliative, improvement or even a return to the normal extent of field was obtained in forty-one. It is possible, the authors consider, that the symptoms may be an expression of intra-cranial high tension, and may therefore not be confined to cases of actual tumour.

The publication of these results of careful inquiry by Bordley and Cushing will point to the necessity for close investigation on the part of other clinicians (*American Archives of Ophthalmology*, xxxviii., v. 1909).

Trachoma.

Much has been written of late regarding the pathology of this pestilent disease, a scourge which affects this country less than most, but which is believed by good authorities to be more frequent with us than it was. The literature has chiefly dealt with the question, still *sub judice*, of the existence and significance of the bodies described by Prowaczek, a difficult and highly technical problem. Meantime it is rather in regard to the treatment of one of its worst manifestations, the presence, namely, of new-formed vessels in the cornea, which should be entirely avascular, that we write. When the granulations in the lids have remained there long enough to irritate the portion of cornea lying in contact with them, and are hard enough and rough enough to render that irritation sufficiently severe, there come to be formed in the superficial layers of the cornea new vessels, which make their way in from the conjunctival loops near the margin, and may be so numerous, and surrounded by so much dimness of the cornea, that vision may be practically lost; in such cases the pathological condition of the cornea is spoken of as pannus, so called from its fancied resemblance to a piece of cloth. It has long been known that should an incidental inflammation of the conjunctiva occur and be sufficiently severe, one effect may be the complete destruction of the "trachoma bodies" in the membrane, and complete recovery may be the result —recovery not merely from the intercurrent affection, but from the previous trachoma as well. This has actually occurred from the accidental infection of an eye with gonorrhœal pus, and the fact has been made use of in the heroic treatment of trachoma by means either of jequirity (prepared from *abrus precatorius*), or actually of pus from a case of gonorrhœa. Now, in any case of gonorrhœa of the conjunctiva, the chief danger —one might almost say the only danger —is lest the cornea should ulcerate, and this risk is all the greater because the cornea is non-vascular. But in a case in which the cornea is superficially vascularised, the danger of such an ulceration is greatly reduced, and there are desperate cases of trachoma in which a good result may be obtained by wilful infection with pus from a gonorrhœal

conjunctiva, and, so far as we know, can be obtained in no other way. Recently Goldzieher, of Buda-Pesth, the chief city of a great trachoma district, has written describing in full detail four cases in which, all other treatment being absolutely unavailing—the patients being not merely blind but in constant misery as well—he succeeded, by infecting the eyes from cases of ophthalmia neonatorum, in absolutely curing the trachoma, so that not a trace of it remained, in rendering the patients comfortable and free from pain, and in enormously increasing their power of vision. It is quite obviously a method of treatment not to be thought of if any less heroic measures are still capable of doing good, but a residuum of cases remains in which this may be the proper line to follow. A very brief account of one case will help to make this more plain; it is that of a man of 25, who became affected with trachoma during his military service (trachoma is very apt to haunt barracks). He was treated for three months as an out-patient, then for eleven months in hospital, undergoing every kind of treatment; he was then dismissed the army as incurably blind. When he consulted Goldzieher he had copious discharge from the eyes, very severe photophobia, the conjunctiva was thick, brawny, very red. The cornea was so filled with new vessels that they could hardly be distinguished one from another; vision was reduced to mere perception of light. He was, when other treatment had again utterly failed, infected from a case of ophthalmia neonatorum, and the result after a few weeks (and remaining permanently) was that the conjunctiva became perfectly sound, not a trace of trachoma remaining, and the cornea nearly quite clear, with corresponding improvement in sight, and the eyes were perfectly free from any injection and any discomfort. In another case a boy, who had been an inmate of the blind asylum, was cured, and dismissed to learn an ordinary trade. Owing to the inherent dangers the method must be a *dernier ressort*, but the result may be a cure more complete than can be secured in much milder cases by any method whatever (*Wien. klin. Wochenschr.*, xxii. pt. 52).

DERMATOLOGY.

By W. ALLAN JAMIESON, M.D., *F.R.C.P.*,
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and
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The Determination of the Cure of Lupus Vulgaris by means of the Local Intradermal Reaction of Tuberculin.

Even the best and most uniform cicatrices after treated lupus often conceal foci which are a menace of recurrence, but too easily realised.

Could we determine and isolate with certainty these latent foci, then, by attacking them seriatim, we might, with the minimum of pain and in the shortest space of time, obtain definite cure. Thibierge and Gastinel (*Ann. de Dermat. et de Syph.*, Paris, December 1909) have, in ten cases which had undergone previous treatment of various kinds, with no apparent trace—over at least the greater extent of the cicatrices—of residual lupus nodules, made intradermic injections of tuberculin in doses of one 100,000th of a milligram, either in the area of the scar itself, or in its immediate proximity. These produced in twenty-four hours, a local reaction, characterised by redness, swelling, and marked and solid infiltration. This progressively diminished, and was gone in about six or eight days. Besides this there showed itself in some instances, near the cicatrix, a blush of redness without infiltration. But the intradermic reaction did not stop here. When it had wholly faded, there still persisted in the affected parts, small spots of a vivid red, slightly prominent, fairly well-defined, and varying in number according to the case. These came on parts which, previous to the injection, were apparently quite normal, and neither by desquamation, nor when the diascope was applied, disclosed any lupus nodules. These red points disappeared without leaving any trace. Sometimes there was no, or but transitory, redness, merely slight superficial scaling betrayed the dermo-epidermic reaction. In no case was the stimulus thus conveyed sufficient to lead to gross lesions macroscopically appreciable. The zone of influence was restricted and only extended a few centimètres from the site of the injection, while any nodule large enough to be visible before, did not take on fresh activity. With the dose mentioned the temperature scarcely rose above normal. When on the same area the injections were repeated the reaction on each occasion sensibly diminished. One may believe, therefore, that as a result of successive tuberculin impregnations the lupus nodules situated within the zone of influence will undergo regression—an attempt at cure. At all events the authors have seen, as a consequence of such injections with feeble doses of tuberculin, one of the most attenuated of the integumentary tuberculoses—erythema induratum—vanish with surprising celerity. A question arises whether the reaction is one special to tuberculin, or is but a vaso-motor phenomenon determined by a toxin? They made an injection of tuberculin on one side of the face, and of anti-diphtheritic serum on the other; in both the reaction was identical, and permitted of the identification of the lupus nodules. It persisted longest on the side injected with the anti-diphtheritic serum. This method by the intradermic injection of tuberculin, harmless in itself, enables one to gauge the results of treatment in a given case of lupus, and to discover if our efforts have produced a real or merely an apparent cure. In the latter case we can decide where further therapeutic measures should be instituted.

The Treatment of Eczema.

The long experience of the veteran Veiel of Cannstatt renders any remarks he makes on this subject of special value. Some extracts, therefore, from an article by him (*Munchener med. Wochenschr.*, 23rd November 1909), may give useful hints. Speaking of arsenic, he says that its efficacy is questionable even in old, infiltrated forms. He wholly condemns the employment of atoxyl or of arsacetin, recommended by Ehrlich, since as a consequence total blindness has resulted, and even death after atoxyl. While the majority of cases are curable, there are isolated intractable ones. These are those forms in particular which are hereditary in certain families. Markedly obstinate also are eczemas round scars. As to the question whether every case of eczema should be cured he is in favour of the attempt being made. While he has frequently seen bronchial asthma and bronchitis appear simultaneously with eczema, he has never observed any regular alternation of the two diseases. In the case of young women, anæmia should be combated by iron preparations or by mineral waters containing iron and arsenic. He quotes an instance in which eczema regularly recurred each spring till a course of iron was carried out in February every year; since then there has been no recurrence. He notes that glycosuric patients bear tar preparations badly. The itching is aggravated, and severe furunculosis is apt to develop. As to diet in eczema, he has never seen the disease cured solely by a restricted dietary, be that vegetarian, meat, or chlorine-free, apart from external measures. To trade eczemas or dermatitis he adds that of surgeons, which, however, thanks to the lessened maltreatment of the skin in the process of disinfection, is now much rarer. Passing to local management he lays down three important therapeutic rules. (1) The more acute the inflammation the milder the remedies. (2) The greatest precaution ought to be taken as to the use of strong measures. Experiment with small doses on limited areas. (3) Persevere in treatment till the last traces have vanished, else recurrences will manifest themselves. In the management of crusted eczema of the scalp he has found a salicylic ointment of great value. This is composed of a drachm of salicylic acid in an ounce of lard. A child is brought for advice with a mass of foul-smelling crusts matting the hair together, from beneath which pus is oozing. A week's application of this ointment renders the scalp dry and the crusts loose and dispels the repulsive odour. Should there be pediculi present, then a drachm of petroleum should be added to the ointment. Ointments for use on the scalp are always to be made up with saponifiable fats and not with vaseline, as this excipient mats the hair and is with great difficulty removed. In cases in which the skin does not stand tar, tumenol, a sulphonised, bituminous mineral oil, is indicated. This is best used in the following

mixture as originally suggested by Neisser. This well shaken and painted on with a stiffish brush :—R Tumenol, 1·0—3·0 ; zinc oxide ; talc. glycerine ; distilled water aa ad 100·0. This may be applied twice a day.

Treatment by Exfoliation in Dermatology.

By this term is designated a method which is intended to destroy the superficial layers of the epidermis, to provoke their mortification and separation in flakes, or in larger or smaller scales, and, in short, to obtain thereby a veritable renewal. The chemical agents employed belong to those known as keratolytic and reducing. Of the former those chiefly made use of are salicylic acid, the alkalies, in the form of hard soda or soft potash, soaps and resorcin. Reducing agents have the property of abstracting oxygen from the epidermic tissues and effect their purpose by evoking an acute or chronic inflammation, rapidly recovered from. Those which are principally had recourse to are resorcin, beta naphthol, camphor and sulphur.

There are three modes in which this procedure may be carried out. The first and most simple is by means of the *exfoliating paste of Unna*. This is composed of—Resorcin, 40·0 ; oxide of zinc, 10·0 ; silicious earth, 2·0 ; benzoated lard, 28·0. As this contains 50 per cent. of resorcin, it must be used with caution, the cutaneous sensibility of the patient should be tested, and the paste allowed to stay on the skin only for eight or ten minutes ; if this is insufficient the paste may, on a second application, be left on for a quarter of an hour. Certain thick skins, very seborrhœic or attacked by acne, may bear it for twice that time, but even in such the application ought never to exceed half an hour. Previous to the application of any exfoliating paste or salve, the unctuousness of the skin should be removed by washing with soap and warm water, to facilitate mordant action. The surface treated must be cleansed by pledgets of wool and vaseline, every trace of resorcin being cleared off. The part should then present a whitish tint like macerated integument. In proportion to the cutaneous sensitiveness and individual reaction, the epidermis on the average becomes dry and rough about the second day, fissures on the two following days, and begins to scale off on the fourth. At the end of about a week the exfoliation is completed, the active inflammation is abated, and a fresh application of the resorcin paste may be made. The whole of the face ought not to be dealt with at once, at least on the first occasion, but by regions in succession.

The second and most pliant is by means of *the exfoliating paste of Brocq*. This consists of beta naphthol and camphor, each 1·0 ; resorcin, 2·0 to 10·0 ; soft soap and precipitated sulphur, each 2·0 to 5·0 ; prepared chalk, 4·0 ; pure lanoline, 6·0 ; pure vaseline, 10·0. The stronger or weaker type is selected in accordance with the sensitiveness of the skin. Begin

by an application of ten to fifteen minutes, progressively extend the daily application, till the epidermis assumes an aspect as if covered with collodion, and is brownish in tint. After total exfoliation the paste may be reapplied should the result not be satisfactory. The action is milder and more manageable than Unna's.

The third method is *that of Darier*. This consists in painting on for three successive nights the following mixture :—Spiritus saponatus kalinus, 40·0 ; resorcin and precipitated sulphur, of each 10·0. This is allowed to dry, and not cleaned off till next day. The sense of burning is considerable. Desquamation begins on the fourth and terminates on the eighth day. In the interval between applications some cooling application may be used, such as anhydrous lanoline, 5·0 ; vaseline, 10·0 ; lime water, 15·0. The chief indication for exfoliative treatment is in cases of severe acne of the face. Three or four series render an obstinate case amenable to milder measures, sometimes a fresh cycle is needed in the course of two or three months. Freckles can be similarly dealt with, but in their case the procedure is more delicate, and considerable experience is required to determine the exact grade of exfoliation to be aimed at. Lastly, the method is valuable in leathery induration or lichenification of the skin. The integument is rendered thinner, and the pruritus is lessened. Applications of twenty minutes are often necessary (*Pautrier*, *La Presse Méd.*, Paris, 8th December 1909).

On the Action of Sulphur in Dermatology.

Sulphur is a remedy universally employed, which exerts a curative effect in many cutaneous affections. Sometimes keratolytic, at other times keratoplastic, it yet may manifest unforeseen physiological phenomena. Brisson (*Ann. de Dermat. et de Syph.*, Paris, November 1909), in a series of observations, has endeavoured to clear up its mode of operation. It forms one of the constituents of the living cell, occurs in the organism as a sulphate, or as a sulphonised compound in keratin. Three kinds are in use—the sublimed, the precipitated, and the colloidal. In the last two the particles are in the finest state of division. The presence of chloride of sodium favours the formation of sulphuric acid from sulphur, and this change is advanced or delayed by the admixture with it of various bodies employed in the treatment of skin diseases. Thus, among others, oxide of zinc, bismuth, and resorcin favour, while camphor, carbolic acid, naphthol, tannin and oil of cade delay, the oxidation. If, in a skin disease, much serum containing chloride of sodium is discharged, the keratin is liable to be broken up. Should, on the contrary, there be a deficiency of soakage of the skin with serum, keratinisation is promoted. Brisson therefore regards all those substances which lower the action of chloride of sodium on sulphur

as keratoplastic, while such as exert a contrary influence, as keratolytic.

Eucerin Cold Cream as a Detergent.

Unna (*Monatsh. f. prakt. Dermat.*, Hamburg, 15th February 1910) observes that the weak side of all treatment of eczema of the face and of rosacea is the difficulty of cleansing the skin. The chief injury is done in the morning, when the skin, after being washed with soap and water, is exposed to air and cold. In order to minimise this the plan of delaying the purification till evening has been adopted, this being done immediately before the employment of the selected local application. In the morning the skin is merely wiped. Since such patients cannot stand ordinary soap, a mild superfatted one must be substituted. There is, however, a small percentage of individuals whose skins are so sensitive, that even these expedients are followed by sensations of heat and tension, which last for some time after each washing. It occurred to Unna that his eucerin cold cream, which contains 28 per cent. more water than ordinary cold cream, might fulfil all indications. This, he has found, it does satisfactorily, and as its use is succeeded by no feeling of tightness or irritation, it can be employed as often as may be required. It is both refreshing and perfectly cleansing. In using it in this way the eucerin cold cream is smeared fairly thickly on the skin with the finger, then after an interval of time the surface is gone over with a soft, fine towel. The skin so dealt with is left clean, and not greasy.

NEW BOOKS AND NEW EDITIONS.

Male Diseases in General Practice: An Introduction to Andrology. By Edred M. Corner, M.A., M.D.(Cantab.), B.Sc.(Lond.), F.R.C.S.(Eng.), Surgeon to the Children's Hospital, Great Ormond Street, &c. Pp. 453. Numerous Illustrations. London: Henry Frowde and Hodder & Stoughton. 1910. Price 15s nett.

The subject-matter of this excellent book is divided into fifteen chapters. Chapter I. deals with Hydrocele, Hæmatocele, and Pyocele. Chapters II. to IX. treat of the Testicle. Beginning with its physiology and development, the author passes on to consider its abnormalities, diseases, and functional disorders, and the various ways of dealing with these conditions by operation and otherwise. Chapters X. to XV. treat respectively of the Vesiculæ Seminales, the Prostate, the Urethra, the Penis, the Scrotum, and injuries to the male Generative Organs.

Mr. Corner has done good service to the medical profession, and through it to the general public, in treating as fully as he has done of the diseases peculiar to men. The book bears the stamp of accurate personal observation, careful clinical research and extensive reading, and not only general practitioners, but also surgeons, will find it a valuable work of reference. The sections dealing with abnormalities of the testicle are among the best in the book, and we may also draw attention to the clear and emphatic warnings which the author gives of the dangers to married women of uncured gleet. The author shows that gonococci capable of causing infection may remain in the urethra for as long as eight years after the disease has been acquired.

While not professing to deal directly with urinary diseases, Mr. Corner has been led to discuss them to a certain extent, and sometimes at too great length for the purpose in view. What is said about operations for enlarged prostate, for instance, and carcinoma of the penis, is too full for a work of this kind, and yet not full enough as a guide for operating surgeons. On the other hand, the operation for varicocele might with advantage have been described more minutely. Mr. Corner gives the after history of a large series of cases of this operation. Some of the results were unsatisfactory, and we would have liked to have had his suggestions as to the mode of operation best calculated to avoid unfortunate after effects.

The discussion of the use of tuberculin in tuberculous epididymitis is scanty, and no mention is made of the vaccine treatment of gleet, or other chronic gonococcal affections.

The term "Andrology" sounds as yet strange in our ears, but so no doubt did "Gynæcology" in those of our predecessors when it was first introduced.

These criticisms, however, do not refer to matters of much importance. The book, as we have said, is an excellent one, and we cordially recommend it to the notice of the medical profession.

Hæmorrhage and Transfusion: an Experimental and Clinical Research. By GEORGE W. CRILE, Professor of Clinical Surgery, Cleveland, Ohio, U.S.A. New York and London: D. Appleton & Co. 1909.

DR. CRILE possesses the enviable capacity of writing books which excite the interest of the reader, and he has done more than any other surgeon to correlate the sciences of physiology and surgery. In this, as in previous works, he founds his thesis on the basis of experimental research, and, having transferred the sphere of operations from the laboratory to the hospital theatre, he substantiates his physiological researches by convincing observations on the human subject.

In this volume of over 550 pages he tells us that it has taken eleven years to obtain the necessary material for the research, and he expresses the amount of his obligation to his colleagues who have worked with him.

After detailing a long series of experiments dealing with the effects of hæmorrhage in animals, he discusses the methods of compensation for loss of blood, and contrasts the phenomena of the bloodless state with those of shock. He has a good deal to say on the influence of strychnine and other cardiac stimulants in the treatment of shock and of the bloodless state, and emphasises the necessity of raising the blood-pressure in the first instance by adding to the volume of the vascular content.

While the introduction of saline solution into the circulation has proved of enormous value in accomplishing this object, he submits a great deal of evidence to show that the introduction of unaltered blood from an animal of the same species is a much more efficient method of treatment. The quality of the vascular content approaches more nearly the normal and the results obtained are more permanent—the added blood remaining in the vessels—whereas saline solution in greater or lesser amount tends to leave these and waterlog the tissues. The method which he describes of joining directly the radial artery of the donor to the median basilic vein of the recipient, although an operation requiring a great deal of technical skill, is that which should be selected whenever possible.

The Practice of Surgery. By W. G. Spencer, M.S., M.B., F.R.C.S., and G. E. Gask, F.R.C.S. With 20 Colour Plates, 28 Skiagram Plates, and 707 Black and White Illustrations. Pp. 1234. London: J. & A. Churchill. 1910. Price 22s. nett.

This represents the tenth edition of the work originated by the late Mr. W. J. Walsham, and continued in the more recent editions by Mr. W. G. Spencer. In general the text has been brought up to date, and new methods of treatment are adequately described. But we are of opinion that the value of Bier's hyperæmic treatment is greatly underestimated. The authors say: "Few follow Professor Bier in employing this venous congestion in acute cases such as whitlow; to do so before making incisions is to increase the danger of extensive suppuration. Applied after incisions there is an increased discharge, but for a whitlow the hand dependent in a hot bath effects the same thing with greater relief of pain." We did not think that any doubt still existed regarding the benefits of passive hyperæmia induced by the constricting bandage and Klapp's suction bells. If properly adjusted, they completely remove the pain of acute inflammations, and increase the power of the tissues in dealing with the organisms and their toxins. As a result, the infec-

tive process is more successfully combated, and any suppuration is more speedily localised. We believe that this method is more efficient than that of active hyperæmia induced by the local application of heat. In addition, owing to the better reaction of the tissues around the infected area, and to the decreased pressure inside the suction bell, good drainage is obtained even through a very small incision. No reference is made in the book to the advantages of passive hyperæmia in the delayed union of fractures. Extensive changes have been made in the diagrams, and many new ones, including some coloured plates, have been added. Special reference may be made to the excellent clinical photographs by Mr. G. P. Newbolt, and the skiagrams by Dr. H. Walsham. The section on Diseases of the Ear is now written by Mr. C. E. West, and Mr. W. H. Jessop has again written on the Surgery of the Eye. The authors have had the advantage of consulting Mr. Tubby's manuscript notes on Orthopædic Surgery. The increased size of the book, which is excellently printed and bound, is mainly due to the greater thickness of the paper and the additional illustrations.

House Drainage, Sewerage, and Sewage Disposal in Relation to Health. By LOUIS C. PARKES, M.D., D.P.H. Pp. viii. and 142. London: H. K. Lewis. 1909. Price 2s. nett.

THE questions dealt with in this book formed the subject of a short series of lectures delivered at the University of London in February 1909. The author has divided the subject into four parts. In Part I. the various methods of infection are dealt with, such as infection by direct contact, by means of gases, by dust, by flies, and by specifically infected soil and water. The author points out that the theory held that sewage does not readily part with its organisms to the air, cannot now be held, as the result of more recent experiments by Major Horrocks and Dr. Andrewes.

The marked diminution in the death-rate from enteric fever and diarrhœal diseases, which have been most directly influenced by modern sanitary methods, is indicated in a series of statistical tables and diagrams; and the influence of modern methods of sanitation (in the broadest sense of the term) on such diseases as phthisis is also pointed out.

In Part II. "conservancy methods" of dealing with organic refuse are dealt with (and in this connection details are given of the incidence of enteric fever in Nottingham since 1887 in houses provided with various kinds of "conservancy" accommodation and with water-closets respectively. The advantages of the latter, *qua* incidence of enteric fever, is well illustrated by these figures).

Part III. deals, from the medical officer of health's point of view,

with water-closets, house drainage, &c., and with sewerage and the ventilation of sewers.

In Part IV., sewage disposal, and the methods of dealing with sewage of different kinds, are discussed. The chemical and bacteriological character of sewage effluents, and the question of liability to nuisance and injury to health incidental to sewage treatment, are also dealt with. The book is an excellent résumé of the present state of our knowledge on sewerage questions. It should prove of use to the larger audience to whom it is now addressed, and more especially to medical officers of health and other officers of local authorities who require to deal with sewage.

Syphilis. By Sir JONATHAN HUTCHINSON, F.R.S., LL.D. New and Enlarged Edition. Pp. 583. With 12 Coloured and 24 Black and White Plates. London: Cassell & Co. 1909.

THE medical world is to be congratulated on the publication of a new edition of Sir Jonathan Hutchinson's well-known work on syphilis. The book in its enlarged and revised form shows a unique wealth of clinical experience with all aspects of the disease, and this is recorded in a most readable manner. It is a matter of great interest to find that the views held by such a broad-minded student of the subject are practically the same as when he penned the first edition, twenty-two years ago. Riper knowledge and reflection make the author emphasise his previous optimistic views regarding the curability of syphilis by means of the small dose grey-powder pill.

In an appendix on Syphilis and Marriage, Sir Jonathan says: "I most unhesitatingly record my conviction—that of an old man who has had much social experience—that, provided the two years' interval be observed, the dangers to society from needlessly prolonged celibacy infinitely exceed the risks of the communication of syphilis."

No higher authority on the subject of syphilis than Sir Jonathan Hutchinson can be consulted, and no library, public or private, can be complete without this exposition of his mature opinions.

NOTES ON BOOKS.

Much of the success of operating depends on the care and intelligence with which nurses carry out details of technique. The reasons and necessity for these details are well and clearly expressed in Mr. E. Stanmore Bishop's capital little book, *Lectures on Surgical Nursing* (J. Wright & Sons). The chapters on the History of Antisepsis and Asepsis, Methods of Sterilisation, and Altruism are excellent, and those

on the Duties of Nurses before and after operation, whether in hospital or in private houses, will well repay careful perusal. The only point on which we do not agree with the author is, his directing the nurse to stand on the patient's *right* side, when passing a silver catheter on the male. Otherwise we have nothing but praise for the work.

The twentieth volume of the *Transactions of the American Pediatric Society* (E. B. Treat & Co.) contains a considerable number of interesting papers, of which, perhaps, those of most general interest are "An Analysis of Four Hundred Cases of Epidemic Meningitis treated with the Antimeningitis Serum," by Simon Flexner, M.D., and James W. Jobling, M.D., and "A Report upon One Thousand Tuberculin Tests in Young Children," by L. Emmett Holt, M.D., LL.D.

Epilepsia (Williams and Norgate) is a new International Quarterly Journal devoted to the study of epilepsy and allied disorders from all points of view—pathological, social, legal, and therapeutic. It is under the distinguished patronage of Drs. W. Bechterew, O. Binswanger, J. Hughlings Jackson, L. Luciani, H. Obersteiner, and F. Raymond. The editor-in-chief for the first year is Dr. J. Donath of Buda-Pesth; and he has five others associated with him, including Dr. Aldren Turner, who represents England. Among the list of collaborators we notice the names of Dr. Edwin Bramwell of Edinburgh and Dr. T. Grainger Stewart of London.

The journal has been adopted as the organ of the International League against Epilepsy, which was formed last autumn during the International Medical Congress at Buda-Pesth. Its contents consist of original artices in German, French, or English (each of which is accompanied by a short abstract in one of the other two languages), of reviews, of abstracts of current literature, and of reports of society meetings.

From the large number of leading authorities on the subject of epilepsy who are giving their support to the new Quarterly, as well as from the excellence of its early numbers, we confidently predict for it a useful and successful career.

The large size (940 pages) of the annual volume of the *Transactions of the American Gynecological Society* for the year 1909 is largely accounted for by the fact that 1909 was the centenary of the introduction of ovariotomy by Ephraim M'Dowell of Kentucky, and that the Presidential Address (by Dr. J. Riddle Goffe) and eight articles were all devoted to this subject. To the readers of this *Journal* the story of M'Dowell will have considerable interest, for, as M'Murtry states, the young Kentucky surgeon entered in 1792 upon the study of medicine in the office of Dr. Humphreys, a graduate of Edinburgh, and in 1793-4 he himself attended the University of Edinburgh, "then universally regarded as

the most famous centre of medical education in the world." Reference is also made to M'Dowell's attendance upon the lectures of John Bell, "the most able and eloquent of the Scottish surgeons of his day," and to his description of the sad fate of women suffering from diseases of the ovaries. Other interesting articles in this volume deal with Cæsarean section in placenta prævia, with the treatment of abortion, with the operative treatment of prolapsus uteri, and with anæsthetics. The American Gynecological Society continues to do fine work.

Dr. Burnet of the Pasteur Institute has brought together in *The Campaign Against Microbes*, translated by E. E. Austen (John Bale, Sons & Danielsson, Ltd.), a number of important problem-studies, written primarily for the intelligent layman who desires to know the beauty and utility of science. He states his idea of how best to convey scientific facts to minds unfamiliar with laboratory research. It is to select the technical part which has educational value, to use terms intelligible but accurate, to present science as liberal and humane, to aim at something higher than the immediate interest of curiosity. Dr. Burnet has succeeded. The lucidity of the Frenchman is well preserved in this translation. The subjects treated are cancer, tuberculosis, tetanus, sleeping sickness, enteritis and intestinal microbes, variola and vaccinia. The accuracy and breadth of knowledge shown in this book make it valuable to all who are not experts in the subject.

The Index du Progrès Médical (1909-1910), which is a sort of *Oliver and Boyd's Almanac* for the medical man, is presented free to all subscribers to the *Progrès Médical*, and is sure to prove of great utility and value. It deals with medical education, universities, hospitals, medical societies, asylums and the like in France (very fully) and in other countries (less in detail). We have generally found the contents to be correct and exact; but Edinburgh has been singularly unfortunate in the details provided for it. The Royal Infirmary is stated to possess eighty (80) beds, and the Royal Medical is the only society referred to. Some of our local medical men will find it hard to recognise themselves in the following list:—"Chirurgie," Prof. Chieue; "Histoire de la médecine," J. D. Convie; "Maladies cutanées et syphilitiques," Norman Walker; "Maladies mentales," Tr. S. Clouston; "Bactériologie," Carnegie Dikson; "Obstétrique," G. Sir Halliday, Croom, F. Barbor; "Pathologie externe," Prof. Caird, prof. Chieue; "Thérapeutique," prof. Wyllie.

Alcohol and Alpinism, by Dr. L. Schnyder, Berne, translated by Edward G. Richards (William Green & Sons), is what it professes to be, consisting, as it mainly does, of answers given by alpinists to printed questions from Dr. Schnyder. These answers naturally vary

much, and therefore afford interesting and amusing reading. We would recommend the book to all who are devoted to athletics, especially mountaineering, and to those who are interested in the temperance question and the actions of alcohol.

The conclusions to which the author comes are mainly these: Alcoholics are not useful, and may be dangerous in climbing. The drinking of wine when the summit is reached may be dangerous by causing excitement, and there is always greater danger in descending than in ascending. Alcohol, in a concentrated form—as brandy—may be useful to rouse a climber to make a special effort, but this is certain to be followed by greater depression. It is safer, therefore, to use alcohol in this way at the end of an expedition than at any other time. Alcohol does not truly stimulate or strengthen, but, acting as a narcotic, makes the person forget his or her fatigue and weakness for the time being. Hence the greater prostration afterwards. Alcohol does not in any way diminish thirst, but rather increases it. A little sour wine may make water more refreshing, but it is evidently the sourness that so acts. Alcohol does not warm though it gives the feeling of warmth from the increased circulation of blood to the surface of the body.

There are several of the alpinists who carry alcohol with them, but there are many who do not. Very few are total abstainers: but it is evident that alcohol is being less used by regular climbers. One pretty frequent remark made by the writers is very striking. They say that alcohol is "better borne" by the young and strong who are accustomed to mountaineering.

In *Congenital Dislocation of the Hip*, Mr. J. Jackson Clarke furnishes us with a useful résumé of the subject based upon his own personal experience in the manipulative and operative treatment of this condition. The clinical records of forty consecutive cases illustrate the practical difficulties which arise in dealing with these cases, and the author's methods of overcoming them. The book, which is published by Messrs. Baillière, Tindall & Cox, is copiously illustrated.

A further issue of selected papers by the staff of the Massachusetts General Hospital contains in a form convenient for reference a great amount of valuable clinical material. As most of these papers have appeared in the medical journals within recent months, and many have been given in abstract in our own pages, we need not do more than mention the appearance of this collection.

A second edition of *Ideal Health and How to Attain it by Physical Culture*, by M. D., has been issued by John Wright & Sons, Ltd. The advice it contains seems to us sound, rational, and moderate.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES AND NEWS.

The Late King.

With the rest of the nation we bow our heads in sorrow for the loss of one who was every inch a king. His tact, his so uncommon common sense, and his understanding of men so endeared him to his subjects that each feels something almost personal in his loss.

To the medical profession the loss comes very closely home. There has never been a king who took so deep and so practical an interest in the health of his subjects and in the work of our profession. True, these matters had been brought very near to him. There are few who have passed through two such severe illnesses as came to Edward VII. in 1871, and in the year of his Coronation, and no doubt these had their influence. As Prince of Wales he threw himself heartily into the cause of the London Hospitals, and gave to hospital charity in general a stimulus which had its effects far beyond London. His interest in the two great plagues of tuberculosis and cancer was very great, and in the Radium Institute which will shortly be opened in London he took an active personal interest. The benefits which were at the disposal of the King he was ever anxious to make available to all his subjects, and his works in this connection will follow him.

He was an Honorary Fellow of both the English Colleges, and, till he ascended the throne, an Honorary Member of the British Medical Association.

Medical Reform in Edinburgh.

THE report of the Committee on the Medical Curriculum, which was adopted by the General Council of the University at its recent meeting, is a document of considerable interest, and we cordially wish it a safe passage on its further journeyings. Some of its suggestions will, we hope, be adopted without any delay, viz., those which deal with the dates of examinations and the consequent alteration of the commencement of the autumn term, and the return to a complete final examination in the three final subjects. With regard to other of the report's proposals, our hope, perhaps, is greater than our expectation, for the changes suggested will, in some instances at least, strike the more conservatively inclined as revolutionary, and we know that revolutions are not popular in universities. But we hope that the proposals will be carefully considered, for they have really been very thoroughly thought out. The first suggestion, in point of order, is that students might be allowed to sit the first professional examination without having attended university classes on the required subjects, provided they have studied them in schools or colleges *approved by the University Court*. Among the arguments commonly put forward against this proposal are—that the standard of school teaching is not up to that which should be expected of students of medicine, that these subjects have great educative value, and that they should be so taught as to have a direct bearing on the practice of medicine. To the first it may be replied that if the standard of teaching is not sufficiently high the students will not pass the examination, and will then have to take out the university classes; to the second, while admitting its truth we must also consider the time these subjects occupy in a limited curriculum; and in relation to the third we point out that most universities recognise the examination in these subjects in the faculties of Arts and Science as exempting students from the first professional. No doubt there is something to be said for their retention at a high standard, and we readily confess that to us the chief attraction of the proposal is that it provides more time for the later, and more technical subjects of the curriculum, for the passing of this examination on leaving school will not shorten the five years' curriculum.

The next suggestion is, that more attention should be paid to practical physics, and that this instruction should be concurrent with the lectures.

In dealing with the second professional examination, the Committee has adopted the suggestion of the Pathological Club, and recommends that the examination in anatomy and physiology should be held in the July preceding the third winter session.

The way is thus cleared for three years of work at the final subjects, for though pathology and materia medica are taken in the third examination, the Committee recommends that they should also be examined upon in the final.

In the final subjects proper very important changes are suggested, for in the opinion of the Committee very important changes are necessary. During the past year or two of active discussion the necessity for more time being found for hospital work has been kept very much in front. Hospital hours are ruled in each city by custom, and it would not be a light matter to alter these. The Committee has accordingly adopted the suggestion first made by Dr. Byrom Bramwell of bringing Saturday morning into the official working week, and by dovetailing the subjects of medicine, surgery, and midwifery have provided an extra hour for hospital work. The Committee thinks that the present arrangement whereby students can enter for any of the earlier subjects separately has worked well and should be continued, but they think that students should take medicine, surgery, and midwifery together. The final examination should be held twice yearly in July and December, the others three times—in April, July, and October. This will involve a return to the commencing of the autumn term in the middle of October, and a curtailment of the long Christmas vacation which has never become acclimatised in Edinburgh. One or two other interesting suggestions are put forward by the Committee, but if the Court will accept those we have dealt with above we feel sure that the Edinburgh graduate of the future will be even better than he has admittedly been in the past.

Reform in Aberdeen.

In Aberdeen matters have advanced further than in Edinburgh, and the University Court has promulgated an ordinance which was the subject of discussion at the recent meeting of the General Council.

Profiting by the example of Edinburgh they have made the ordinance somewhat elastic, and we hope that the more cordial spirit now prevailing between the Universities will allow it to remain so. In passing we are glad to note that Glasgow University, while not approving of certain provisions in the St. Andrews New Ordinance, has contented itself with comment, and will not oppose the ordinance.

It is interesting to note that the Aberdeen General Council's Committee which reported on the ordinance, agrees with Glasgow that biology is not an adequate substitute for botany and zoology, and is apparently opposed to the Edinburgh suggestion that school instruction should be recognised. On the subject of practical pharmacy the Committee speaks out plainly—"In these days it has become less and less necessary for a medical man in practice to be a practical pharmacist, capable of making pills, powders, and potions. These can be supplied to him in better form by highly-educated chemists and druggists, and even if he should be obliged in country districts to supply the medicines he prescribes to his patients, he can obtain these wholesale from chemists who devote themselves to this branch of trade. The time

allotted in the New Ordinance to Practical Pharmacy may, in a heavily loaded curriculum, be more profitably employed."

The Committee cordially approve of the provision for taking into account in professional examinations the work done by the student in his classes, and recommend that it should be extended to hospital work. This is a suggestion which was considered by the Edinburgh Committee, and only parted from with reluctance owing to the difficulties involved in its working in the numerous extra-academical classes. Both the Edinburgh and the Aberdeen Committees give evidence of a leaning towards the "block" system, but apparently neither consider the proposal sufficiently ripe for adoption.

Towards the end of their report the Committee puts forward the suggestion that botany, zoology, chemistry, and physics should be removed from the medical curriculum and made the subjects of a preliminary scientific examination. So that the differences between the reformers of the two schools are not so very great after all.

A Reactionary Resolution in Public Health.

At the recent Convention of Royal Burghs a motion was moved, and carried by a majority, that the Burgh Police Act, 1892, and the Public Health Act of 1897 be so amended as that "in the event of no registered practitioner resident in the burgh having the necessary diploma for public health appointment, any registered medical practitioner might be appointed, and that a remit be made to the annual committee to endeavour to have effect given to the resolution." This movement within the burghal local authorities is distinctly of a reactionary nature. It is an attempt to get beyond the wholesome provisions of these Acts, which insist upon men holding responsible advisory positions giving proof that they have made a special study of sanitary questions, and are conversant with matters relating to sanitary law. If such a resolution were carried into effect it would have this bad result to begin with, that many young practitioners would cease trying to gain the now coveted Public Health Diploma; for if they stood a fair chance of getting the appointment of medical officer without it, there would be less inducement to them to take upon themselves the extra work and increased expense of obtaining the diploma. It is also quite an unnecessary proposal, for the simple reason that every burgh is situated in a county, and there is always the county medical officer ready to be appointed, with the approval, which is sure to be granted, of the Local Government Board. The question might have been passed over as one likely to be only a danger in theory, were it not for the last clause remitting it to the annual committee. This means that the framers of the resolution intend to keep working it up with the view of carrying it through in future; and as the proposal is reactionary, unnecessary, and dangerous, it is as well to bring it at once before the notice of the profession.

Pellagra.

THE rate at which cases of pellagra are cropping up in the United States of America is a matter of grave concern to the public health authorities. The disease has been found to be present in the Eastern and Southern States to a quite unsuspected extent. Scarcely a week passes without some fresh cases being reported. There is no doubt that the disease has been gradually spreading for some years past, but has not been recognised. Owing to the insidiousness of the onset and the protean character of the symptoms the condition has escaped diagnosis, and it is only now that the attention of the medical profession has been drawn to the disease that its true nature is being recognised. In one asylum alone in Illinois, out of about 2000 patients over 100 were found to be suffering from pellagra. The disease, in its present epidemic form at least, must be of comparatively recent origin, as no such fatal disease could have existed long to any great extent without attracting notice. Now that the true nature of the disease has been pointed out, physicians in America are beginning to recall cases which had puzzled them by the obscurity of their symptoms. This is just a repetition of what always occurs when an unusual epidemic disease breaks out in a district. The early cases are not diagnosed, but when the physician is on the outlook for the disease, the diagnosis is easily made when a case is met.

In one asylum the attendants were severely reprimanded for allowing the patients to be sunburned, but although every precaution was taken, cases of supposed severe sunburn of the hands and face continued to recur from time to time during the summer months. In cases where patients suffering from pellagra with lesions very like scalds or severe sunburns on the exposed parts died suddenly, the authorities had great difficulty in persuading the relatives that some accident had not occurred. But since the true nature of the disease has been recognised, these obscure cases of "sunburn" have been explained. Up till recently patients suffering from pellagra, many of whom died in asylums, were treated as cases of chronic insanity with pronounced gastro-intestinal symptoms, of unknown origin.

The recognition of the skin lesions, which so much resemble erythema multiforme and sunburn, is as essential to the diagnosis of pellagra as the rash is in smallpox or in any other of the exanthemata. The present frequent discussion of the symptoms of the disease in medical meetings in the States will do much to teach the profession how to recognise the condition early, and so give the patient the best possible chance of recovery. So far the majority of cases have been found in asylums, and the experience in Italy is that for every case in an asylum there are about ten outside. Contrary to the experience in Italy, where pellagra occurs chiefly in rural districts among ill-nourished peasants, cases have been discovered in America chiefly in urban districts, and in better as well as poorer class persons.

With characteristic American promptitude a thorough process of investigation has been set on foot. A conference on pellagra was held last November in Columbia, South Carolina, and that has done a great deal to stimulate interest in the disease. Those who have investigated the cases report that the disease is identical in all characteristics with the typical pellagra found in Italy and Spain. In the States an enormous quantity of maize is consumed as food, and the results of recent investigations in America go to support the theory, which is at present most generally accepted in Italy, that the cause of pellagra is the eating of damaged Indian corn. Various fungi have been described as growing on such maize, and producing toxic substances which give rise to the symptoms. The Army medical authorities have taken the matter up, and deputed several members of their staff to devote their energies to this work, and special laboratories have been opened to carry on bacteriological and chemical research on pellagra. Now that America has been roused to the important rôle which Indian corn plays in the production of pellagra, more attention will probably be paid to the inspection of maize which is to be used for human food. One physician in Virginia has already suggested that each State should form and rigidly enforce laws relative to the method of cultivating, harvesting, maturing, protecting, and milling Indian corn. Thus it is hoped much will be done in the future to prevent the spread of a disease which in Italy must have proved fatal to millions of people.

New Hospitals in Edinburgh.

For several months medical interest in Edinburgh has been concerned with proposals for two new hospital schemes. There was for a time some disposition to discuss these as rival schemes, and to assume that supporters of the one were necessarily opponents of the other, but this feeling has happily passed away. The new Women's Hospital has advanced further than the other scheme. Sufficient funds have been forthcoming, and the committee has purchased (at a very moderate price) Dr. Haultain's old "Home" in Archibald Place, where there will be accommodation for about eighteen patients. The rules for admission are very strict, and will be strictly adhered to. No one will be admitted either as an out- or in-patient except on the recommendation of her doctor, who will be the sole judge of her fitness. A uniform charge of £1 a week will be made for maintenance, and the services of the staff will be provided free. The staff is composed as follows:—Surgeons, Drs. Haultain and Lackie; assistant-surgeons, Mr Scott Carmichael, and Drs. Angus Macdonald and John M'Gibbon.

The arrangements for the other scheme are hardly so far forward. It is in essence a nursing home promoted and managed by the medical profession. The promoters aim at raising a sum of £10,000, with which they intend to provide a nursing home which shall be

primarily for the lower middle, and upper working classes. Careful estimates have shown that such a home can be run and clear its expenses if the patients pay an average sum of £2 a week. There are, however, many who are unable to pay so much, and it is intended to average the charges by rates varying from 10s. 6d. to £3, 3s. There will be no staff; each patient will select his or her own doctor, and the doctor will be remunerated as if he were attending at the patient's own home.

It is an experiment, the results of which will be watched with much interest in other places than Edinburgh. It is essentially a co-operative medical scheme, and it will not go to the public until solid support is forthcoming from the medical profession. That support is, we learn, already assured, and we think the promoters are justified in going to the charitable public to ask their assistance in the capital expenditure involved. Once the home is started it should, if it is to justify its existence, require no charitable aid, but the preliminary outlay is necessarily considerable, and those who are loudest in insisting on the importance of preserving the independence of the less well-to-do may put their words into deeds by subscribing to the initial expenditure of this most interesting and most promising venture. One suggestion we feel constrained to make. It is that it should be clearly laid down that patients who are admitted on the lowest rate of maintenance should be charged the lowest possible medical fee. To those who know the medical profession this proviso is quite unnecessary, but in going to the public it is necessary to go with the cleanest of clean hands, and we think it would be diplomatic to make some such regulation.

The success of the experiment depends on the hearty co-operation of the consultant and the practitioner, and we are proud to reflect that in no place could the experiment have been made with more promise of success than in Edinburgh, where the relations between all branches of the medical profession are to-day, as they have been for long years, of the happiest possible description.

The Edinburgh Post-Graduate Course, 1910.

THE striking success which has attended the Edinburgh Post-Graduate Course since it was reorganised in 1906 has encouraged the committee of management to add year by year to the facilities for study offered to those who take advantage of it, and the prospectus of the course to be held during the autumn months of this year presents a most comprehensive and attractive programme.

A course on Internal Medicine will commence upon Monday, 1st August, and extend for four weeks from this date. It will comprise classes upon—Medical Applied Anatomy, Hæmatology, Bacteriology, the Examination of the Heart, the Examination of the Nervous System, the Examination of the Urine and Digestive Products, and the

Examination of Sick Children, in addition to a series of clinics upon Diseases of the Heart, Lungs, Blood, Nervous System, Stomach and Kidneys, General Diseases and Abdomen.

The entries for this course will be limited to twenty-five.

The General Course, which will be subdivided into two independent fortnights, will commence on Monday, 5th September, and conclude on Friday, 30th September 1910. Among the subjects included under this course are Medical Anatomy, the Medical and Surgical Affections of Children, the Inspection of School Children, Dermatology, Clinics upon Diseases of the Eye, Demonstrations upon the Pathology of the Eye, Infant Feeding, Infectious Diseases, Clinics upon Medicine, Surgery and Neurology, Morbid Anatomy, Microscopic Demonstrations on Tropical Diseases, Clinics upon Venereal Diseases, &c.

Limited classes on Bacteriology, Diseases of the Blood, Diseases of the Ear, Nose and Throat, Errors of Refraction, Gynecology, Histological Methods employed in Medical Diagnosis, Ophthalmoscopy, X-Ray and Electrical Work, will also be held; and a series of special lectures have been arranged for, a number of which will deal with the progress of Medicine in its various departments during the preceding ten years.

A Surgical Course will also commence on 5th September, and will include classes upon Surgical Anatomy, Surgical Pathology, Histological Methods applied to Surgery, and Operative Surgery, in addition to specially arranged daily Surgical Clinics.

The entries for the Surgical Course will be limited to twenty-five.

The prospectus, which contains full particulars, may be obtained from The Secretary, Post-Graduate Course, the Faculty Office, University New Buildings.

Tuberculosis Conference. The National Association for the Prevention of Consumption and other forms of Tuberculosis will hold its annual meeting and conference in Edinburgh early in July. The object of this association is to educate public opinion on the subject of tuberculosis, and in addition to a series of discussions on such subjects as "The Avenues of Infection in Tuberculosis": "Preventive Measures and Administrative Control of Tuberculosis": "The Incidence of Tuberculosis in Childhood": and "The Working-Man in Relation to Tuberculosis," there will be a Tuberculosis Exhibition, including the Exhibition of the National Association which has excited so much interest in London, Oxford, and Cambridge. The exhibition will be open to the general public free of charge, and arrangements are being made to explain the various exhibits.

Professor Osler will preside at the meetings of conference, and many leading authorities on the subject of tuberculosis in the United Kingdom, America, and the Continent will take part.

LOCAL RECURRENCE AFTER REMOVAL AS A SIGN OF MALIGNANCY IN TUMOURS OF THE FEMALE MAMMA.

By Sir GEORGE THOS. BEATSON, M.D., K.C.B.,
Surgeon to the Glasgow Western Infirmary and Surgeon to the Glasgow Cancer Hospital.

Recurrence after removal of a tumour of the female mamma may be local, regional, or general, but I propose to deal in this paper only with the local variety. When this takes place, the surgeon regards it as having a distinct bearing on the nature of the primary growth for which he operated, and he usually considers it to be one of the most distinctive features of malignancy or semi-malignancy in the original neoplasm. He also accepts the usual explanation given of such an occurrence, and regards it as the result of incomplete removal of the first tumour. This may be so in many instances, but the two following cases show that this view may not always be the correct one, and that it is capable of another interpretation:—

In October 1901, Mrs. M., æt. 35, a married woman who had had one child, was admitted into the Western Infirmary under my care suffering from a swelling of the right mamma. She had noticed it for about four months, and for the three weeks previous to admission it had grown rapidly. She also informed me that three years before she had had a small lump removed from the upper part of the same breast. On examining the right mamma a hard and somewhat nodular swelling was felt in its lower and outer quadrant, but the tumour was fairly movable along with the breast over the pectoral muscles, and there was neither adhesion of skin over the growth, nor retraction of the nipple, nor any enlarged glands to be felt in the axilla. On 31st October an incision was made into the swelling and into the breast, and as both were found to be cystic the whole mamma was removed. The pathological report on the breast after removal was that it was the seat of that variety of cystic disease characterised by intra-cystic growths. The patient made a good recovery, and I saw nothing more of her until November 1908—seven years after the operation—when she sought advice for a small hard nodule in the outer edge of the great pectoral muscle of the right side. She first noticed this swelling five months previously, and was satisfied it was becoming larger. Patient seemed in excellent health, but

there was no doubt as to the existence of a small hard growth of the size of a walnut in the anterior wall of the axilla in the vicinity of the old scar. On 11th November I operated and removed the tumour, which I found to be embedded in the fibres of the great pectoral muscle. It was taken away with some of the surrounding muscular tissue, and when cut into it was found to be cystic and to contain a dark sanguineous fluid. Dr. Teacher's report on it was as follows:—"There is a solid mass within a thin-walled cyst. The mass presents the character of an intra-cystic adenoma (or in parts papilloma). Although it is a very cellular growth, I am of the opinion that it is innocent."

The other case I wish to refer to is that of Mrs. S., æt. 56, who was admitted into the Western Infirmary under my care in December 1907 suffering from a rapidly-growing tumour of the right mamma, which was removed on 23rd December, and proved to be a fibro-adenoma. The case, with an illustration, was published in the *Edinburgh Medical Journal* for November 1908. In my account of it I say: "At the operation the tumour was found to be encapsuled, the mammary tissue being pushed aside and thinned. The whole mamma was, however, removed along with the tumour, but the contents of the axilla were not interfered with, as there appeared to be no secondary infection of the glands." The pathological report on the tumour stated that it was a fibro-adenoma with the stroma in an active state, as shown by its cellular character, and that the glandular acini in it were dilated and lined with layers of epithelium. Further on in my article, when discussing the nature of the tumour, I wrote as follows:—"Some go the length of calling any adenoma with an excess of stroma an adeno-sarcoma, and would so designate this case I am recording, but this is not justified and is misleading, for such a tumour does not recur and does not infect neighbouring lymphatic glands as a true sarcoma does."

As regards recurrence, the subsequent course of events in the case has not confirmed the above view, for the patient was re-admitted to the Western Infirmary under my care on 11th February of this year suffering from a hard swelling to the inner side of the old scar. She stated that she had remained well since the operation in December 1907 until six or eight weeks before admission, when she noticed a small lump near the cicatrix. It gradually increased in size, and was at times the seat of pain. On readmission patient looked healthy and well-nourished. Examination of the seat of the operation wound showed the

presence in its vicinity of a tumour quite the size of an orange. It consisted of two rounded portions with a depression between, the upper portion being more prominent and lying adjacent to the old scar about its middle. The tumour was movable on the deep structures, but there was some slight puckering of the skin over its upper part on movement. I removed the tumour on 14th of February, and Professor Muir reported on it as follows:—"The tumour is an adenoma, the acini being comparatively few and of large size. They are lined by a single or double layer of epithelium. No trace of epithelial infiltration. The stroma is very abundant and cellular, and almost sarcomatous in appearance. The tumour corresponds to the 'adeno-sarcoma' of writers, but I doubt if it is really malignant. The stroma is more cellular, and there is less epithelium than on previous occasion."

Notwithstanding the above favourable pathological report, the clinical history of the case is indicative of the malignancy of the tumour, and that is the interpretation one is inclined to put on the facts looking to the weight usually given to local recurrrence as bearing on such a point, but one hesitates to take up a position so absolutely antagonistic to the microscopic appearances unless there is no escape from it. It seems to me that there is, and that possibly the case of Mrs. M. first referred to furnishes an explanation that may harmonise both the clinical and the microscopical conditions present. In that case it will be remembered there was a reappearance of a tumour some years after the removal of the breast for a cystic condition that is undoubtedly regarded as simple. Examination of the facts makes it, I think, clear that the second tumour was due not to the incomplete removal of the primary one but to a remnant left behind of the parenchyma of the mammary gland. As we know, recent investigations by Heidenhain, Stiles, Rotter, and others have shown that the female mamma, devoid as it is of capsule, has a much wider distribution on the thoracic wall than was formerly supposed, and that the ramifications of the gland tissue may extend in all directions, even into the substance of the great pectoral muscle. This latter extension was what existed in Mrs. M.'s case, and explains the position of the second tumour which was embedded in the muscular fibres. What apparently happened was that this small remnant of breast tissue, *after the lapse of some years*, took on the same cystic degeneration that had shown itself in the mamma of which it was really a part though to some extent separated from it. If this is what took place,

and everything points to it, then it is quite reasonable to suppose that in Mrs. S.'s case a portion of mammary tissue left behind has, after an interval, manifested the same kind of tumour growth that occurred primarily in the main body of the breast to which it belonged, but of which it was an outlying part. Assuming, as I feel inclined to do, that this is the state of matters, it materially affects the importance of the "recurrence" as a sign of malignancy, and supports Professor Muir's pathological report in favour of the tumour being benign.

The possibility of portions of normal gland tissue, left behind after removal of the mamma for a neoplasm, remaining quiescent for years, and then subsequently becoming active by taking on the characters of the primary growth for which operation had been previously done, opens up several questions of interest and importance. It would undoubtedly affect the value of local recurrence as a symptom of malignancy and it might serve as an explanation of the apparent want of agreement between clinical and pathological reports. Further, it seems to me to offer an interpretation of those cases that are characterised by the appearance of cancerous nodules near the scar many years—I have known a case where they appeared eleven years—after a successful operation for mammary cancer. There has always been a difficulty in accounting for these manifestations of the disease. If they are due to incomplete removal of the primary tumour, it is not easy to understand their prolonged latency. On the other hand, if they arise from portions of normal mammary tissue left behind, that, after a long interval, have been newly attacked by malignant action, then their occurrence is more intelligible. That this may happen is not impossible, for it is a clinical fact now generally admitted that a person may be cured of a cancerous tumour by operation and subsequently be attacked elsewhere by a growth quite different from the original one. In illustration of this I can quote a case of mammary cancer successfully treated by removal, whose death, seven years afterwards, was due to a cancer of the large bowel which was not secondary to the scirrhus of the breast, but was a fresh primary columnar-celled tumour. Instances such as these naturally raise a question as to the nature of cancer, and as to whether we are correct in abandoning the view that it may be doing some physiological work in the body.

ON THE TREATMENT OF ACUTE GONORRHEAL URETHRITIS IN THE MALE BY PASSIVE HYPERÆMIA.[1]

By ALEXANDER MILES, M.D., F.R.C.S.,
Surgeon, Royal Infirmary, Edinburgh.

THOSE who have had any considerable experience in the treatment of acute gonorrheal urethritis—particularly in the class who seek advice at a Lock Hospital—must, I think, have reason to be dissatisfied with the results obtained by the use of urethral injections. The very multiplicity of the applications recommended for local use, and the variety of syringes and other instruments employed in the process, sufficiently indicate that no one method has yielded results which are to be regarded as satisfactory.

I do not doubt that if the surgeon can himself administer the treatment, and can control the patient under a strict régime, benefit may follow the use of properly selected local applications, but in the circumstances under which the majority of private patients must be treated, the necessity for secrecy and considerations of expense render these conditions unattainable. In the out-patient department of a Lock Hospital it is impossible to ensure the regular attendance of the patient, and to regulate his mode of living, even if the surgeon can devote the time necessary for efficiently carrying out treatment by injections. To entrust the patient himself with the syringe is, I feel sure, worse than useless.

My own experience in the use of injections during the first few months I had charge of the Lock Wards in the Royal Infirmary was sufficient to lead me to cast about for a more satisfactory method of treatment, and this, it is only fair to add, in spite of the fact that the ward-master personally administered the injections, and did so with great skill.

The success of Bier's method of treating acute inflammatory conditions by artificially induced hyperæmia suggested the propriety of attempting to adapt the principle to the treatment of gonorrhœa affecting the anterior urethra. A short trial of the application of a constricting bandage to the root of the penis did

[1] Read before the Medico-Chirurgical Society of Edinburgh, 4th May 1910.

not yield encouraging results, and experiments were next made with a suction apparatus. Some difficulty was met with in obtaining a suction-bell which could be adapted securely to the penis, but after some time an efficient apparatus was secured.

Apparatus Employed.—It consists of a glass cylinder about 7 inches long and 2 inches in diameter, closed at one end, and with a small lateral tube near the blind end (Fig. 1). Over the open end is fitted a conical rubber flange with a thick rubber ring, like an umbrella ring, let into its narrow free edge. This thickening of the margin of the flange is of importance in rendering the apparatus air-tight. The bell is exhausted through the lateral tube by means of a metal pump attached to a short piece of stout rubber tubing, over which an ordinary clamp is slipped to occlude the tube after the air has been withdrawn.

Method of Application.—After the patient has passed water, the flange is applied around the penis as far back as possible, care being taken to retract the hair so that it is not included in the constricting ring. An elastic band is then applied over the flange to ensure close apposition with the skin. The bell is now passed over the penis, the wide (forward) end of the flange slipped over it, and the air is withdrawn by the aspirating syringe, and the tube clamped. Three or four strokes of the piston usually produce a sufficient vacuum.

The penis at once becomes turgid, swollen, and bluish in colour, the appearance being comparable to that of the organ in a state of priapism—say, after a spinal injury. If there is even a moderately profuse discharge, some drops of pus exude from the meatus. The proper amount of suction causes no pain or discomfort; if pain is produced the vacuum is excessive, and some air should be allowed to enter by slightly relaxing the clamp. In from ten to fifteen minutes the clamp is removed, and air allowed to enter the bell, and after an interval of five minutes it is again exhausted. This is repeated two or three times, the whole séance lasting about an hour.

The bell is applied once daily. At first, in a number of in-patients, we used it twice a day, and in a few cases, three times, but the results were less satisfactory than those obtained by a single daily application. The discharge was increased in amount, and in several cases was tinged with blood. In one or two cases in which the bell was applied three times a day there was actual bleeding from the urethra—an evidence, I suppose, that the congestion induced in the mucous membrane had been excessive. In

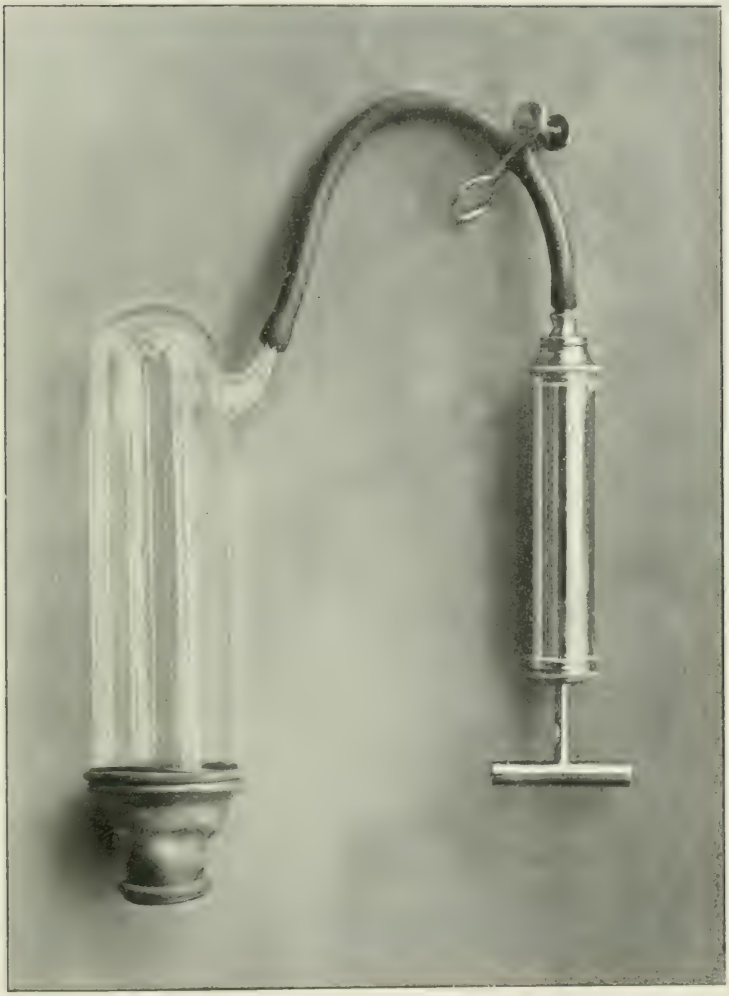

Fig. 1.—Suction bell used in the treatment of acute gonorrheal urethritis in the male.

two cases, in which more than one daily application was made, the patients felt ill, and the local symptoms were aggravated. In mild cases of gonorrhœa, on the other hand, a single daily application for twenty minutes has proved quite efficient.

Microscopic Examination of the Discharge.—While the method was still in the experimental stage, films were taken from each case immediately before, and a short time after, the use of the bell, and these were compared. To avoid errors arising from differences in staining, both films were taken on the same slide, the smear taken before being made in the form of the figure 1, and that after in the form of the figure 2, so that there might be no confusion.

The results were remarkably constant; there was a distinct increase in the number of fresh, well-formed polymorph leucocytes in the discharge examined after the bell had been used, and the proportion of intra-cellular cocci was much greater. In one case, before the bell was applied there were numerous cocci in the discharge, but they were all extra-cellular; after the use of the bell the cocci were nearly all intra-cellular, and they appeared to be more numerous.

It is difficult to estimate the actual number of cocci ingested by the cells, but, so far as we could judge, it would appear that the greater number of intra-cellular organisms found after the suction depends, not upon an increased power of the individual cells to ingest cocci, but on the presence of a greater number of leucocytes capable of ingesting them. It is not unlikely that an increase in the opsonic power of the patient's serum results from the hyperæmia, and that thereby the organisms fall an easy prey to the phagocytes.

It is thus evident that the hyperæmia induced by the suction-bell is attended with a distinct local leucocytosis, and that the phagocytes thus brought up actively ingest the organisms.

Results. — From an experience of over 300 cases of acute gonorrhœa of the anterior urethra treated by this method, I think we may claim that it is more cleanly than that by injections, and that the patient can more easily be instructed to carry it out safely and efficiently for himself. It is a further advantage that the method is available in cases of phymosis, in which the œdema of the prepuce precludes the use of injections. If the objection is raised that it occupies a whole hour every day, one would reply that the average patient is just as likely to be able to devote this time to it as to find favourable opportunities of regularly administering injections three times in the day.

Before referring to the effect of the treatment on the symptoms, it may be well to state definitely that these remarks apply to acute gonorrhœa confined to the anterior urethra. I desire to emphasise this, because some of my friends who have seen the method applied in the Lock Wards, have employed it in cases of chronic purulent discharge and gleet, and have been disappointed. They found, as we had done in several experimental cases, that the discharge was markedly increased, pain and scalding on micturition returned, and the condition was apparently rendered much worse.

I think it is highly probable that if the patients could have been induced to persevere with the treatment, they would have derived benefit from it, but this they declined to do.

As regards the effect of the treatment in acute cases, the first striking advantage to be noted is that the pain and scalding on micturition are often relieved even by the first application, and have usually disappeared by the end of the second day of treatment. Frequency of micturition, if present, is markedly diminished, and chordee has not been complained of in any of our cases.

It is very difficult in hospital practice to obtain statistical evidence with regard to the duration of the discharge in cases of gonorrhœa—particularly such evidence as is useful for purposes of comparison between different methods of treatment. Many of the patients cease to attend as soon as the pain has disappeared and the discharge has materially diminished, and only return if recurrence takes place or complications ensue.

In the majority of our cases in which the patient applied for treatment early and continued it throughout, the purulent discharge had ceased in about fourteen days, and a slight gleety discharge persisted for about a week longer. In a few cases the discharge disappeared after three or four applications of the bell, while in others it continued for three or four weeks.

The greatest advantage of the method, however, lies in the fact that we have had an almost complete absence of complications in the cases treated by the suction-bell. Only in two cases did epididymitis develop. One was a young lad of 16, who, for family reasons, was detained in the wards, and it came out that in the absence of the ward-master he had been skylarking with another patient, and had received a knock on the testis. In the other case no explanation was forthcoming.

The difficulty of obtaining reliable statistics regarding the frequency of epididymitis as a complication of gonorrhœa may

be gathered from the fact that the published records of different observers show a variation of from 11·7 per cent. to 29·9 per cent. in hospital practice, and from 3 to 8 per cent. among private patients. These data refer to patients treated by injections or by internal remedies only. Even if we take the lowest of these figures, the hyperæmic treatment shows a marked improvement.

This diminution in the number of cases of epididymitis connotes a corresponding infrequency in the occurrence of posterior urethritis. Whether or not gonorrhœa always spreads to the posterior urethra, as is held by some, we need not here stop to discuss; suffice it to say that in our cases treated by the suction-bell, the classic symptoms of acute posterior urethritis—frequent and urgent urination, strangury with hæmaturia, pain in the perineum, and chordee—were seldom present and were never severe.

No case of acute prostatitis or prostatic abscess, of cystitis, or of peri-urethral abscess was met with. In only two or three cases did a mixed-infection bubo develop.

Gonorrhœal arthritis supervened in two cases, and it is interesting to note that in one of these, in fifteen separate examinations made of the discharge, the great majority of the gonococci were found to be extra-cellular—evidence, I take it, that the opsonic power was abnormally low.

I have, of course, no means of judging if the method has any influence in preventing the development of stricture.

During the first year, in order that we might estimate the effect of the hyperæmia apart from other factors, no internal treatment was employed. The next year balsams—usually in the form of sandal-wood oil—or alkaline mixtures were given in addition. The difference in the results was not striking, but on the whole the addition of the internal treatment appeared to be of advantage.

In a few cases in which symptoms of posterior urethritis were present, in addition to the tubular bell for the penis, an ordinary Klapp's bell was applied over the perineum, but the number of observations made does not justify any definite statement with regard to the results obtained.

I desire here to acknowledge my indebtedness to my clinical assistants, Mr. Archd. M'Kendrick, Dr. J. A. Gray, Mr. James Lochhead, and Dr. W. B. Hendry, for their assistance in carrying out the treatment and observing the results in these cases.

TWO CASES OF VOLKMANN'S ISCHÆMIC CONTRACTURE.

By DAVID M. GREIG, C.M., F.R.C.S.,
Surgeon, Dundee Royal Infirmary; Lecturer on Clinical Surgery and Surgical Diseases of Children, St. Andrews University.

THE permanent deformity known as Volkmann's ischæmic contracture, following on the too tight application of bandages or retentive apparatus in fractures or bruises of the extremities, is such a serious and unlooked for, but at the same time fortunately rare sequel to such injuries, that it is desirable it should be more generally recognised than hitherto appears to have been the case. No paper can take the place of a practical demonstration of the striking features of the condition, but the two following cases exemplify the symptoms, and the reproductions of the photographs give as good an idea of the appearances as can be conveyed by a monochrome picture:—

CASE I.—In January 1908 a schoolboy, aged 5 years, was accidentally knocked down and sustained a fracture of the left femur about mid-shaft. He was admitted to the Children's Ward in the Dundee Royal Infirmary the same day.

His family history was satisfactory. He was the second of four children, all of whom and whose parents were well, though the father was of intemperate habits. A sister made an excellent recovery under my care from a compound fracture of the leg, and a younger brother from an operation for the radical cure of hernia.

On admission he was found to have some impetigo on the face and legs. Under an anæsthetic coaptation of the fragments was easy; extension was applied, four local splints adjusted round the injured thigh, and the child put in a double knock-knee splint. This was not done under my supervision, for I do not apply extension in such young children unless the muscular development be unusual, which in this case it was not. A turn of the bandage fixing the extension had evidently been drawn too firmly just below the knee, and resulted in pain with swelling of the foot and discoloration of the toes, which necessitated an inspection thirty-six hours later. The limb was put up in a similar way, but the extension omitted. After the lapse of a fortnight the splints having become loose were readjusted. The limb was still slightly swollen and blue, and there was a ring of discoloured skin below the knee. The splints were finally removed at the end of a month

from the accident, and the fracture found soundly healed in good position. The condition below the knee suggested an abrasion more than anything else, and there was a small abrasion on the outer side of the foot, near the root of the little toe. Ointment was applied to both places, and he was allowed to go home.

The immediate sequence of events was not under trained supervision. The skin below the knee healed rapidly, and all signs of irritation vanished, but the ulcer on the foot spread very considerably till it extended to the base of the fifth metatarsal, forming a large ulcerated area. The boy complained of the foot being sore, and a degree of talipes equinus resulted which was thought to be a voluntarily acquired condition, due to the ulceration on the outer border of the foot. He complained much of pain in the foot and some in the leg, and there was certainly decided hyperæsthesia. Gradually the ulceration at the outer border of the foot healed up, and gradually, too, the limb became less sensitive, but retained a coldness and blueness indicative of defective circulation. The talipes equinus became more marked, and there was a slight tendency to varus. In spite of warm weather, massage, and constant urging to attempt some use of the foot, the condition remained unaltered, except for diminution of the hyperæsthesia.

When he was readmitted to the Children's Ward six months later the foot was markedly cold and blue, with a slight tendency to swelling, but no great œdema. He allowed handling in moderation, but the foot was rigidly maintained in the equinus position. The muscles of the calf were atrophied and hard, and the tendo Achillis drawn up. An attempt to move the ankle joint under general anæsthesia produced no improvement, and about a month later tenotomy of the tendo Achillis was done. This made it easy to place the foot at a right angle, and in this position it remained until he was discharged after two months in hospital. With a little encouragement he could then put the sole flat on the ground, and it was hoped that the improvement would be maintained. After the lapse of a month, however, he returned to hospital with the foot in the same condition as it had been prior to the tenotomy. When he had gone home he had been able to put his foot down flat and walk, though he could not move it at the ankle; thereafter, however, more pain set in, the foot got bluer and more swollen, and there was a little ulceration on the dorsum of the fourth and fifth toes. This interfered with his exercise, and gradually the foot became drawn up again. The swelling and discoloration became more marked, while the atrophy of the muscles

of the calf and the limb's coldness remained as before. The ulceration at the foot and toes had healed, and the amount of cicatricial tissue below the knee indicated more destruction of the skin than had been expected.

I did not see him again until fifteen months had elapsed, when I found his walking had materially improved. The skin was unusually easily abraded and then more difficult to heal. The old cicatrix at the knee was pliable, soft, and much less noticeable than formerly. The muscular atrophy, however, remained the same, and the foot and leg had not regained their natural colour and were colder than normal. Sensation appeared to be but slightly affected, though the patient's youth made accurate observation impossible. There was slight movement at the ankle, though his foot could not be quite flexed to a right angle, and he could voluntarily move his toes a little. The condition as it existed at this time is depicted in Fig. 1.

Case II.—An apprentice grocer, aged 18, was engaged in gymnastics, when he fell and produced a compound fracture of the bones of the right forearm. The radius was fractured transversely near its upper extremity, the ulna more obliquely and lower down. The fracture was placed in as good position as possible, though the lower fragment of the ulna was drawn somewhat towards the radius. Anterior and posterior splints were applied and left on for two days, during which time he had a great deal of pain which entirely prevented his sleeping. The splints felt tight, and the hand "was all swollen up and dark blue in colour." The splints were readjusted on the third day, and the swelling rapidly diminished, and at no other time during the treatment was the hand swollen or discoloured, nor did the splints feel tight. During the first week there seems to have been some suppuration in connection with the wound, and when the splints were finally removed there was found to be marked anæsthesia, and at the same time flexion of the fingers and inability to straighten them. Attempts were made to counteract this contraction by prolonged application of splints, and the splints were not finally removed until three months after the accident.

He came under my observation four months later. I found him to be a healthy lad of good family and personal history. There was a considerable amount of muscular atrophy of the right forearm, perhaps slightly more marked towards the ulnar side than the radial. On the anterior surface and above the middle there was an irregular cicatrix, and a little lower over the back of

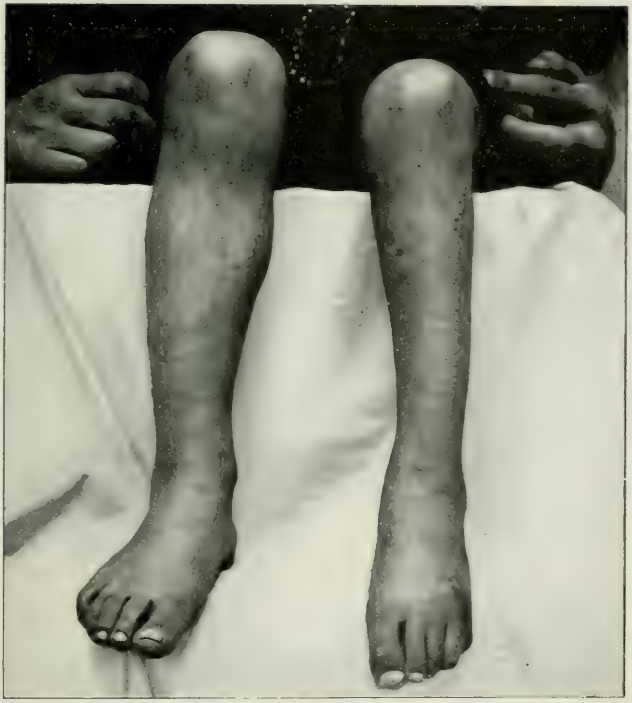

FIG. 1.—Volkmann's Ischæmic Contracture. Case I., showing permanent condition of the affected limb two years after the injury.

the ulna a two-inch vertical cicatrix. The former was in part due to the compound nature of the fracture, while the latter was said to have been caused by the pressure of the splints or bandages. There was still some provisional callus about the middle of the ulna and towards the upper end of the radius. The fingers were flexed at the inter-phalangeal joints and could not be extended. Movements at the elbow were normal, pronation and supination of the forearm considerably interfered with, flexion and extension at the wrist diminished, and radial and ulnar flexion practically

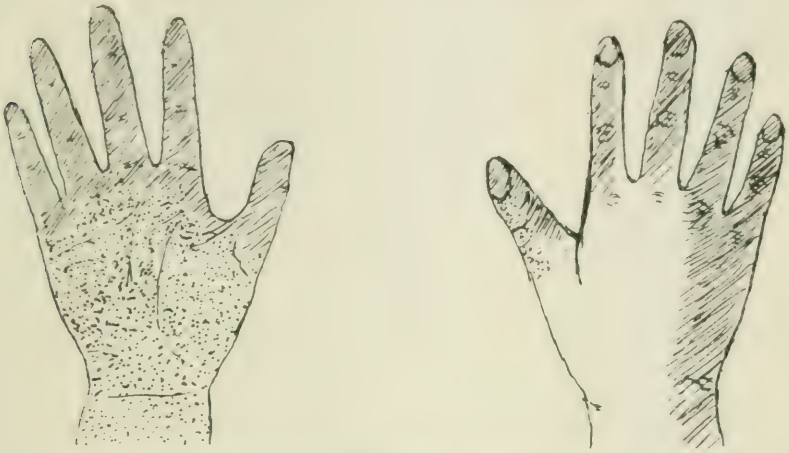

Fig. 2.—Volkmann's Ischæmic Contracture. Diagram illustrating the alteration in sensation in Case II., four months after receipt of the injury. The dotted areas indicate partial anæsthesia; the shaded areas, complete anæsthesia.

absent. There was marked wasting of the thenar and hypothenar eminences. The thumb was fixed in extension at the metacarpo-phalangeal, while flexed at its inter-phalangeal joint. Opposition of the thumb was absent, while abduction was exceedingly slight. All movements of the fingers were much interfered with, and adduction and abduction absent. Sensation in the forearm was normal, but in the hand was as indicated in Fig. 2.

Had it not been for the compound nature of the fracture and the history of copious discharge during the first week, and in view of the fact that the doctor who attended him reported that there had been much laceration of the muscles, with "a great deal of effusion of blood" at the time of the accident, when the "upper end of the radius was just through the skin," one would have been able to recognise that there was no possibility of having to deal with involvement of nerves in callus or in the cicatrix. In

order to investigate the condition of the nerves, I dissected out almost in the entire forearm the ulnar and median nerves, and found them to be to some extent perhaps adherent to scar tissue, but not in any way involved in callus, and to my mind not so seriously involved as to produce the loss of function which then characterised the injury. The wound healed by first intention, and he was allowed home in a fortnight, but continued to attend the hospital for some time thereafter. A month after this operation electric examination showed some reaction of degeneration in the

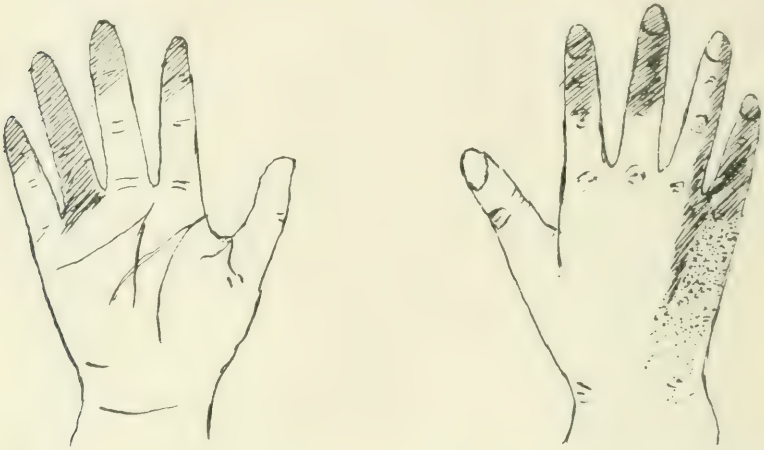

FIG. 3.—Volkmann's Ischæmic Contracture. Diagram illustrating the improved sensation in Case II. a month after neurolysis, and five months after receipt of injury. The dotted areas indicate partial anæsthesia; the shaded areas, complete anæsthesia.

muscles supplied by the ulnar nerve, in particular of the hand muscles. Sensation had, however, decidedly improved, and was as indicated in Fig. 3.

Ten months after the accident considerable improvement had taken place. The hand was of better colour, and except over the dorsum of the terminal phalanges about the nails, where the skin was slightly reddened and glazed, its appearance differed in no way from the normal. Movement was much better and sensation was practically normal. His fingers and thumb were still flexed, but with flexion at the wrist he was able to straighten his digits. In his employment with his father, who is a market gardener, he is able to handle his spade with the left hand, while he lifts with the right. The appearance of the affected limb and its comparison with its fellow is shown in Fig. 4.

Volkmann's ischæmic contracture has been defined by a recent writer[1] as "a primary muscular contracture from necrobiosis of

FIG. 4.—Volkmann's Ischæmic Contracture. Case II., showing condition of affected limb thirteen months after the injury, and seven after the neurolysis.

the muscular tissue dependent on its deprivation of arterial blood." The admission of this and the appreciation of the changes which it would entail give a perfect picture of the entire condition. The cause is invariably too tight bandaging of the proximal part of a limb. In the immense majority of cases[2] it is brought about in the flexor muscles of the forearm, and in children and young persons after treatment of fractures about the elbow joint.[2] It is common knowledge that, especially in children, fractures at the elbow are apt to be complicated with considerable effusion of blood; the skin is tight and stretched on account of this effusion, the subcutaneous tissue filled with it, and the muscles, vessels, and nerves unduly compressed by it. It must be in some cases all that nature can do to maintain the circulation in the distal parts, and it is easy to understand how such pressure may be aggravated by flexion of the forearm in the application of splints, or the scale turned against recovery by increasing the difficulty of nutrition by the application of tight bandages. It is not curious, when we consider how fractures are usually put up, that Volkmann's ischæmic contracture should be more common in the upper than in the lower extremity. The dependent, as well as the flexed position in which the upper extremity is usually placed after the reposition of a fracture or a dislocation, may favour obstruction of the circulation more than in the lower extremity where the limb is put up more or less extended, and the recumbent posture is necessarily assumed. The injury occurs with peculiar rapidity, and my cases emphasise that fact. In the younger of the two the faulty bandage was removed two days after its application, but already the harm was done; in the elder the splints were readjusted on the third day, but by that time the cause of Volkmann's contracture had been brought about. It is the same with other cases which have been reported. There is always a degree of pain, which ought to excite early suspicion that all is not right. This is accompanied by swelling, duskiness of the parts distal to the bandage, and discoloration from the congestion. With the readjustment of the bandages all these disquieting signs disappear, but the necrobiosis of the muscular tissue has been already produced, and in the upper extremity, even then, slight contracture of the fingers may be noticed, which is the first indication of the Volkmann's contracture which is to increase day by day and week by week till on the ultimate removal of the retentive apparatus a condition has to be faced much more puzzling and serious than the original treatment of the fracture. Unwelcome evidence of the excessive pressure is found in a very large proportion of cases in the existence of pressure sores.

With the relief of constriction the swelling and discoloration rapidly disappear, pressure sores are relieved or prevented, and pain and discomfort diminish; the pulsation in the arteries, lately obscured, can again be felt, and all is apparently satisfactory, but presently the affected muscles which appeared paralysed become atrophied, more contracted and hard. In the upper extremity the wrist and fingers cannot be extended at the same time, though if the wrist be strongly flexed the fingers can be straightened, while if the lower extremity be affected the toes become flexed and the foot extended at the ankle. The muscles affected generally present the reaction of degeneration. The effect on the nerves seems to be as serious as the effect on the muscles, and the ischæmic myositis described above has its counterpart in the ischæmic neuritis. In the younger of my two patients his youth prevented the exploiting of the nervous phenomena, but in the elder this was easily carried out. The median and the ulnar nerves were seriously and extensively affected, and pains were felt, accompanied by loss of sensation, in the parts supplied by these nerves. The alteration in the texture of the skin, such as is well known to accompany injury to nerves and certain nerve diseases, takes place, and is evidence of the profound nervous disturbance. At the same time it appears that the nerve injury is more readily and thoroughly recovered from than the injury to the muscles. Indeed the latter is of a more or less permanent character, and though operations have been devised to relieve the consequences of the contracture, it cannot be said that their results have been very gratifying. When one reads of such operations being recommended as the lengthening of all the tendons affected, or the removal of pieces from the radius and ulna so as to accommodate the length of the bones to the conditions produced by the contracture; where splints and forcible extension produced pressure sores and rupture of tissues; where massage and electricity soon reach their maximum of utility, one must conclude that prevention is better than cure, that the condition of Volkmann's ischæmic contracture, ischæmic myositis, and ischæmic neuritis are conditions produced unwittingly in swollen and injured limbs by too tight bandaging, which may be prevented only by the use of a maximum of elastic padding with a minimum of pressure until such time as nature has absorbed the immediate effusions produced by the injury.

References.—[1] Harris, W., "Ischæmic Myositis and Neuritis," *Brit. Med. Journ.*, 26th September 1908. [2] Ginsburg, *Amer. Journ. of Med. Sciences*, October 1909.

RELAPSE IN CEREBRO-SPINAL MENINGITIS, WITH NOTES ON A CASE TREATED BY SERUM AND VACCINES.

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THE occurrence of relapse in cerebro-spinal meningitis is a phenomenon recognised by all writers on the subject, though the term is sometimes used rather indefinitely. It is obviously improper to apply it to a mere exacerbation of symptoms during the course of an acute case. It should be reserved for those occasions when a patient who has apparently overcome the infection and is progressing towards recovery suffers from a new attack sufficiently well marked to be recognised as cerebro-spinal meningitis if seen then for the first time.

There are, as yet, no reliable statistics as to the frequency of relapse. In recent literature it is mentioned chiefly in relation to prevention and treatment. Netter[1] suggests that it may be prevented by vigorous treatment by anti-meningococcal sera. This was not the experience of Currie and Macgregor,[2] who found that serum treatment, whether during the acute or chronic phase, had no effect in preventing relapses. As to treatment, Flexner,[3] Dunn,[4] Churchill,[5] and others agree that relapses should receive precisely the same treatment as the first attack.

A series of 400 cases treated with their serum, in which were 19 relapses (4·75 per cent.), is recorded by Flexner and Jobling (*loc. cit.*). Amongst 167 cases treated by various methods at the City Hospital, Edinburgh, there were 18 relapses, or 10·7 per cent. Those cases may be classified into three groups:—(1) 49 cases treated by Flexner's serum, with a case mortality of 46·9 per cent., and a relapse rate of 16·3 per cent.; (2) 40 cases treated by sera other than Flexner's (Kolles's, Ruppell's, Jochmann's, and Burroughs Wellcome & Co.'s) with a case mortality of 72·5 per cent., and a relapse rate of 12·5 per cent.; (3) 78 cases treated without serum, with a case mortality of 83·3 per cent., and a relapse rate of 6·4 per cent.

It is obvious that the group with the lowest case mortality has the highest relapse rate and *vice versâ*. One may suppose that the patients who, treated by Flexner's serum, recovered and had

relapses later, are represented by deaths in the other groups. This is exactly analogous to the case of diphtheria, in which serum treatment, while greatly reducing the mortality, has been associated with an apparent increase of post-diphtheritic paralysis.

The following case is of interest as showing a succession of relapses and the result of vaccine treatment as a preventative:—

George L., aged 20, unmarried, was admitted to the City Hospital on 23rd June 1909, notified as cerebro-spinal meningitis. He had been employed as a "checker" in a brewery, where

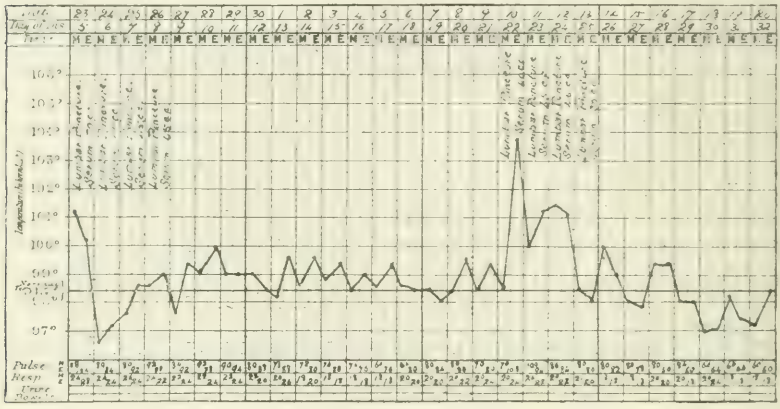


Chart I.

his work was light and his surroundings healthy. His home conditions, however, were unsatisfactory—ten persons inhabiting two rooms. Family history without significance. A moderate drinker and smoker. No previous diseases. The history was that on the 19th he had vomited, shivered, and complained of headache, and on the 22nd, the day before admission, had become delirious.

On admission he was delirious, noisy and confused. He resisted examination, and appeared to be deaf. The neck was quite rigid, but there was no head retraction. The abdominal reflexes were active: Kernig's sign was present, but not well marked. No herpes and no cutaneous haemorrhages. Temperature 101·2° F., pulse 88. (See Chart I.)

Lumbar puncture was performed; 40 c.c. of slightly turbid fluid withdrawn, and 30 c.c. of Flexner's serum injected into the spinal canal. He passed a fairly good night. The fluid, when examined microscopically, showed numerous polymorphs and a fair number of meningococci, mostly extra-cellular.

On 24th June he appeared rather better; 50 c.c. of opalescent fluid were withdrawn, and 45 c.c. serum injected. The fluid showed very few meningococci, both extra-cellular and intra-cellular.

On 25th June 60 c.c. of opalescent fluid were withdrawn, and 45 c.c. of serum administered. No organisms could be detected in the fluid.

On 26th June he seemed decidedly improved though still quite deaf. Kernig's sign was present. On lumbar puncture 45 c.c. of clear fluid, containing only cellular debris were removed, and 45 c.c. of serum injected.

On the 28th he looked fairly well, though still quite deaf. Slight rigidity of the neck persisted. By the 4th of July he seemed quite well, save for his deafness and a suggestion of Kernig's sign.

He progressed admirably till the 10th of July, complaining only of occasional slight headache. On the evening of the 10th, however, he had an obvious relapse, with headache, vomiting, and a return of Kernig's sign. Forty c.c. of turbid fluid were removed by lumbar puncture, and replaced by 40 c.c. of serum. The relapse ran a favourable course, and was treated in the ordinary way, that is, by lumbar puncture and intra-spinal injection of Flexner's serum, until meningococci could no longer be detected in the fluid. On this occasion he was punctured on four successive days, and received in all 160 c.c. of serum. By the 15th of July he was looking well and was able to read a newspaper. Kernig's sign had disappeared by the 21st. On the 29th, five weeks after admission, he had a serum rash and slight arthritis. Thereafter his convalescence was uninterrupted, and he was discharged on 21st August feeling quite well, though deaf and a little weak on his legs.

He remained at home for a fortnight, and then returned to work. On the 26th of September he felt a sudden severe pain in his head. This continued intermittently till the 29th, when he had a fit of vomiting, and suffered from some dimness of vision with pain across the eyes. On the following day he was admitted to hospital. (See Chart II.)

On admission he was conscious, but evidently suffering acutely in head and back. Kernig's sign and neck rigidity were again present, and, as before, herpes and haemorrhages were absent. The attack was more severe than either of the previous ones so far as subjective symptoms were concerned. Headache and back-

ache were very severe, and he slept only after hypnotics. He was lumbar punctured on three occasions, and received altogether 95 c.c. of serum. By the 5th of October he was decidedly better, and was sleeping well; by the 8th he was free from headache, and showed only a trace of Kernig's sign. This had completely disappeared by the 14th. By the 21st he could walk round the hospital grounds without fatigue, and on the 29th he was discharged.

He continued well till 2nd December, when he had a severe fit of shivering, when headache and abdominal pain, which compelled him to take to bed. On 4th and 5th December he had fairly profuse epistaxis—the first occasion on which this symptom

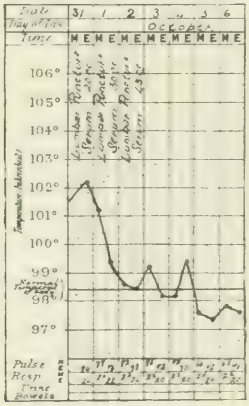
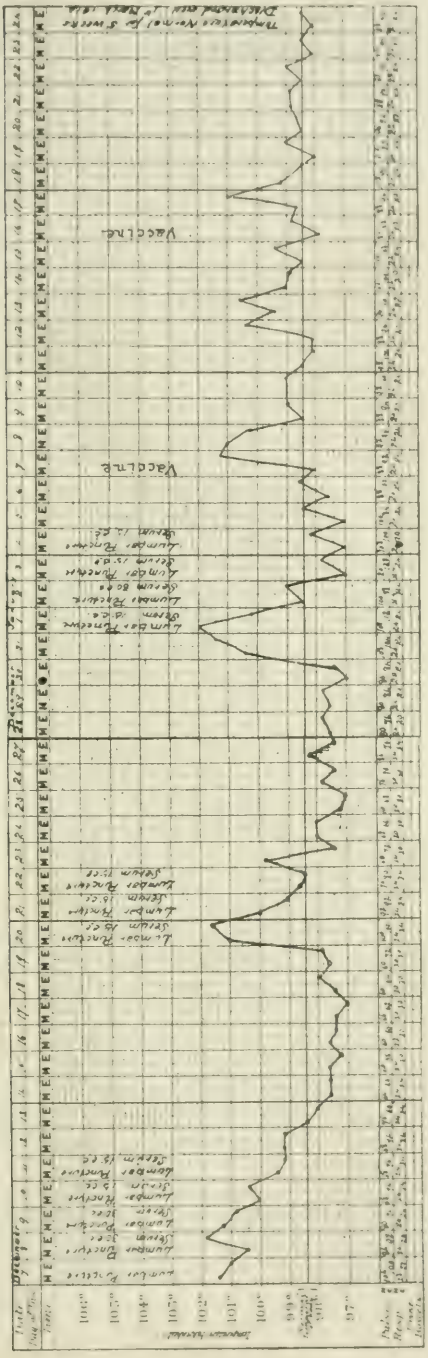


Chart II.

had appeared. He was sent to hospital on 7th December. On admission he did not appear to be very ill, though he complained of severe headache, had slight neck rigidity, and Kernig's sign was fairly well marked. Again there were no cutaneous haemorrhages and no herpes. He was lumbar punctured on admission and on the four succeeding days, and received altogether 90 c.c. of serum. This is a smaller dose than such a case usually requires, but on this occasion there was some evidence of intra-cranial pressure, which it was thought inadvisable to increase. He remained conscious during this attack, but complained greatly of headache and insomnia. After 12th December he improved rapidly, and by the 14th appeared quite well, save for a trace of Kernig's sign. (See Chart III.)

About midnight on the 19th he had a fit of vomiting, and complained of headache and backache. Next morning his


Vaccine
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Lumbar Puncture

temperature was 101° F., and Kernig's sign was better marked than it had been during the previous attack. Lumbar puncture obtained about 40 c.c. of milky fluid, containing polymorphs, lymphocytes, and meningococci, both intra- and extra-cellular. Fifteen c.c. of Flexner's serum were injected on this and the two following days. He improved rapidly, and appeared quite well by the 24th. During this attack I was unable to obtain meningococci by culture from his cerebro-spinal fluid, so could not prepare a vaccine from a fresh strain of his organism as I had intended to do.

He continued to progress until 31st December, when he had pain in his head and back, and showed a well-marked Kernig. As I was particularly anxious to obtain a fresh culture of meningococci from his fluid he was not punctured during the day, and was kept under morphia at night. Next morning he appeared to be in considerable pain, and was extremely nervous. Lumbar puncture was performed under chloroform, and about 80 c.c. of turbid fluid withdrawn. Microscopic examination showed degenerated polymorphs and very many meningococci, mostly extracellular. Good cultures of meningococci were obtained from this fluid. During the two following days he continued very ill. He was noisy and delirious, very nervous and hyperæsthetic. Hypodermics of morphia appeared to have little effect. On 4th January, however, he was much quieter, and seemed distinctly better. He was punctured four times during this attack, and received 75 c.c. of serum. The fluid obtained on 4th January contained few polymorphs and no organisms. By the 7th his pain was quite gone; he seemed well, and was in good spirits. He had wasted considerably during this attack.

In the meantime a vaccine had been prepared by smearing several loopfuls of cerebro-spinal fluid over a tube of Löffler's serum, and cultivating for 18 hours. The growth was washed into a sterile tube with a little normal saline, the tube sealed in the flame, and the emulsion thoroughly mixed by shaking. It was then standardised by Wright's method to a strength of 17 million cocci per c.c., and killed by the addition of 0·25 per cent. pure carbolic acid.

On 7th January, when the attack appeared to be over, and the patient's temperature was normal, 1 c.c. of vaccine = 17 million cocci was injected at 12.15 P.M. At 4 P.M. he complained of headache and pain in the back. His temperature was 97·4° F. At 8 P.M. it had risen to 101·2° F., the headache and backache

continuing, and slight neck rigidity and head retraction being present. He passed a good night, and next morning had slight headache, and a temperature of 101° F. In the evening his temperature fell to 100·2° F., and next morning—9th January—was normal, though he still had some headache. This seems to have been a negative phase. I did not attempt to estimate the opsonic index, but was content to judge the effect of the vaccine by the patient's condition.

He had slight headache and nausea till the 10th, and on that date a little difficulty in micturition. Thereafter he remained well, with slight elevations of temperature, but without any discomfort during the next week.

A second injection of 17 million cocci was given at 1 P.M. on the 16th. His temperature remained about normal till 4 P.M. on the following day, when it rose to 100·2° F., and at 8 P.M. was 101°. There was no accompanying headache or disturbance. This was probably a slight negative phase.

From this date the patient rapidly improved, putting on flesh and looking brighter and in better spirits than he had done since admission. On the 24th, 34 million cocci, and on the 31st, 51 million cocci, were injected without any disturbance on either occasion.

He remained in hospital till the 1st of March, during which time he had no pain of any kind, felt perfectly well, and developed a hearty appetite. On discharge he seemed quite well, except for his deafness. He has remained well since, and has been able to attend to his work without interruption.

It seems evident that those relapses must have been due to the existence of some focus in his tissues where meningococci could remain quiescent during the intervals between the attacks. I made several examinations of his nasopharynx, but though Gram-negative diplococci were obtained, none could be found which were indubitable meningococci.

The patient had in all six attacks. The intervals, counting from the first day in each case, were seventeen days, seventy-eight days, sixty-two days, thirteen days, and twelve days. His apparent reaction to vaccine treatment and subsequent freedom from relapse are at least suggestive. Vaccines have been used as a therapeutic agency in cerebro-spinal meningitis by Radman,[6] Rundle,[7] and others. I believe they may prove of value in prophylaxis.

I have to thank Dr. Ker for permission to publish these notes.

References.—[1] Netter, *Bull. de l'Académie de Médicine*, tome 61, 10th May 1909. [2] Currie and Macgregor, *Lancet*, 10th October 1908. [3] Flexner and Jobling, *Journ. Exp. Med.*, vol. x. No. 5. [4] Dunn, *Boston Med. and Surg. Journ.*, 3rd December 1908. [5] Churchill, *Archives of Pediatrics* (N. Y.), October 1908. [6] Radman, *Semaine Médicale*, 10th July 1907. [7] Rundle and Mottram, *Lancet*, 27th July 1907.

THE TRAINING OF TEACHERS IN HYGIENE.

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SINCE my appointment as Lecturer on Hygiene in the Edinburgh Provincial Training College, I have been asked so frequently what the nature of my work really is, that I think it may be of some general interest if I attempt to give a short account of the course in School and Personal Hygiene which is provided for our students in training as teachers. Now that medical inspection of the children attending the elementary schools has come into force, medical men and school teachers are being brought into very close association, and the kind of teaching which the teachers receive during their course of training is therefore of greater practical interest to the medical profession than ever before.

Before speaking of the course in hygiene, however, it may be well to say a few words about the Provincial Committees under whose auspices the great majority of our future school teachers are being trained.

The Provincial Committees are four in number, corresponding to the four University districts—Edinburgh, Glasgow, Aberdeen, and St. Andrews with Dundee. The establishment of these committees represents a step forward in the elimination of sectarianism from education. Up till three years ago the training of teachers in Scotland was in the hands of the various churches. Now, the old Presbyterian Training Colleges, as such, have ceased to exist, and their places have been taken by the new Provincial Training Colleges. The Roman Catholics and the Episcopalians, who do not believe in undenominationalism, still retain their separate training colleges, but the number of their students is small, and the new colleges provide a national system of training for the teaching profession which is taken advantage of by members of all denominations. Upon the Edinburgh Provincial Committee we find representatives of the University, the Heriot-Watt College, the Merchant Company, the Edinburgh School Board, the various school boards throughout the district from Berwick to Dumfries, the Church of Scotland, and the United Free Church, besides co-opted members. For the actual work of the Training College, the old buildings of the Church of Scotland Training College in Chambers Street, the Normal School in Johnston Terrace, and

the Free Church College and Normal School at Moray House are being utilised. The school at Moray House is utilised as a practising school, and facilities for practice in teaching are granted by the Edinburgh School Board in a number of the board schools. Arrangements are in progress for the erection of a new Central Training College at Moray House. The Provincial Committee has also established a free Kindergarten in Gilmore Place, where a number of the students gain some insight into Kindergarten methods of teaching. It may, perhaps, be added that a large proportion of the students—nearly all the men, and rather less than half the women—attend classes in the University with the view of obtaining a degree in Arts. A few students have already graduated when they come to the Training College, and it is hoped that the number of these will increase in the near future.

Now, as to the course in hygiene, the first point to note is the time allotted. In three of the four centres one hour per week during one year of training is allowed for the ordinary course of instruction in hygiene. In Glasgow the more liberal allowance of forty-five lectures and fifteen meetings for practical work is made. In the other centres a certain amount of supplementary work is done by the students, or by some of them. In Edinburgh, for example, extra meetings are arranged for students who intend to teach in secondary schools. Moreover, a good deal of instruction in hygiene is given incidentally in the classes in physical training which the students attend for one or two hours weekly throughout their course.

The aim of the course is definitely practical. It is not intended that the course in hygiene should form part of the student's scientific training. If it were, the time allotted would be altogether inadequate. What is intended is that the students should be taught to observe children; that they should learn to form judgments as to their state of health and nutrition; that they should learn to recognise the signs of fatigue, of debility, of nervousness; that they should become acquainted with the more frequent disorders of childhood, and especially with those which interfere with their own work as teachers (*e.g.* adenoids, deafness, defective vision); that they should learn to appreciate the dangers to which children are exposed in school—from faults in the school building (bad ventilation, bad lighting, &c.); from faults in the school work (too prolonged mental strain, too fine sewing, bad postures, &c.); from faults in their neighbours (infection

and contagion). Moreover, in the work of medical inspection, it is necessary that the teacher should give some assistance to the medical examiner, and therefore the students are taught how to weigh and measure children and to make and record other observations. It is not intended to make the student "a kind of doctor," but it is hoped that he may be helped to recognise when a doctor's advice is needed.

In view of the practical aim of the course, I am of opinion that the time allotted is fairly satisfactory, provided it is used to the best advantage. But if the best use of the time is to be made, two things are, in my opinion, desirable. The first is that, at the beginning of their training, or before they enter the Training College at all (*e.g.* while they are "junior students"—the modern representative of the old pupil teacher—at a Junior Student Centre), the students should learn something of the general structure of the human body. This instruction should not be given in the form of a course of lectures on elementary physiology. It should be given partly by means of a few special demonstrations, but chiefly by means of incidental instruction in the course of physical training. If the students are to possess even a rudimentary understanding of the Swedish system of physical exercises in which they are trained, it is obvious that they must learn something of the framework of the body, of the arrangement and action of the muscles, and of the influence of movement on the respiration and the circulation, and upon the other bodily functions.

The second desideratum refers to the place in the course of training which should be given to hygiene. The general practice, hitherto, has been to include hygiene among the first year's subjects of instruction. In my opinion, it would be to the advantage of the students if the subject could be deferred to their second year of training—a plan which is now being adopted in Edinburgh. In their first year the students do not easily recognise, and can scarcely be expected to recognise, the practical importance of the subject. Moreover, they themselves still retain the pupils', as distinct from the teachers', attitude towards the subject. At school their receptive faculties chiefly have been cultivated. The result is that one sometimes feels that, while one might gain a cheap reputation as a good teacher by dictating a set of notes which could be "got up," some of the students at any rate are a little apt to be bored by a class in which they are constantly expected to "look and see." On the other hand, by their second year the students have had sufficient experience in teaching to have developed a new attitude

towards children, and various questions concerning them arise from time to time in their minds. They can scarcely help observing differences between various children in a class; between various classes; between various schools. They find that some children constantly keep their mouths open, that some are incorrigibly restless and inattentive, that not only are some children brighter than others, but that a particular class in a particular school may be peculiarly difficult or fatiguing to the teacher. They find school attendance interfered with by skin diseases, by infectious diseases, and so on. Probably they see a little, and hear more, about medical inspection. In all these ways an apperceptive basis has been laid which enables them to assimilate the instruction given in the class of hygiene, which they now find of interest, because they realise its practical bearing upon their own life work. Moreover, they see the prospect of the immediate practical application of their knowledge; whereas, if instruction in hygiene is confined to the first year of training, it is to be feared that much of what has been taught will be completely forgotten before the training is completed. Practical experience with classes of students who have had some teaching experience corroborates very emphatically the advantage of deferring the study of school hygiene to as late a stage in the period of training as is practicable.

It is now time to say something of the methods of instruction adopted. These include lectures and demonstrations, visits to schools, and practical work by the students in class. Lectures are regarded as subsidiary to the practical work. In a short course it seems a waste of time to lecture upon subjects which a student can easily read up from a prescribed text-book. At the same time it is possible to underestimate the educational value of the lecture. The lecture, especially if accompanied by demonstration, as it almost always is, may serve to awaken the student's interest, and assist him over the preliminary difficulties which always attend the study of a new subject. Moreover, there are some subjects, such as the infectious illnesses of school children, which must be dealt with by means of lectures, if they are to be included in the course at all. Visits to schools should probably form a larger part of the course of instruction than they do. The chief difficulty in the way is the number of students. It is scarcely satisfactory to take more than about twenty students to visit a classroom, and as we have about four hundred students attending the class of hygiene, twenty visits to a school would be required to allow each student to attend once. Larger num-

bers of students, however, can be taken to a school for the purpose of studying the school building, the methods of warming and ventilation, and similar subjects.

By the kindness of the headmasters, I have been able to take small parties of students to the schools for the blind, and for the deaf and dumb, and also to the special school at Willowbrae for mentally defective and crippled children.

The actual observation of children forms an important part of the course. For this purpose selected children are utilised very much as patients in the infirmary are utilised for clinical lectures and demonstrations. For demonstration one does not restrict oneself to what the medical student would regard as "good cases." It is important that the student-teacher should learn to recognise a normal child when he sees one. Moreover, one prefers, as a general rule, to avoid demonstrating children who are so grossly abnormal as to be presumably sensitive on the subject. Minor abnormalities, such as the student is certain to meet with frequently, afford the best material for class purposes, and are abundant in every school. Care is, of course, taken to conduct the demonstrations in such a way that no exception to anything said or done is likely to be taken either by the children or by their parents.

As regards the practical work done by the students themselves, perhaps it will be best if I describe a sample class-meeting. The subject is "Nutrition and Growth," and the problem set is to ascertain the actual state of nutrition of a number of children. A dozen children or so from a neighbouring school are distributed among the students. Each student examines, weighs, and measures a child, and fills in certain particulars upon a table on the blackboard. The children are all of the same age, but are otherwise unselected. The table is as follows:—

Initials of Child.	Boy or Girl.	Age.	Appearance Stout, Medium, or Thin).	Height (Inches).	Deviation from Standard, + or −.	Weight (Lbs.).	Deviation from Standard, + or −.

After the table has been completed any abnormalities noticed among the children are pointed out to the class (rickets, deformities, &c.). The children are then sent back to school. The students copy the complete table from the board, and are asked

to write a report upon the children they have seen, referring to the average height and weight, the greatest deviations from the standard, the greatest differences in height and weight between individual children, the bearing of such differences on school work, and so on.

On other days the students, in a similar way, make observations upon the teeth of the children, ascertaining the average number of teeth present in a group of children, the average number of decayed teeth per child, the relationship between dental caries and malnutrition, and the influence of dental caries in causing irregularity of attendance at school, upon the influence of movement on the pulse and respiration rate, upon the posture of children in sitting (in relation to school furniture), and standing (to read), upon the voice and articulation (in selected children suffering from lolling and lisping, stammering, adenoids, &c.), upon hearing, vision, &c. They also fill up a couple of printed schedules based upon the schedule for medical examination, but containing only such particulars as a teacher might be expected to notice. All these exercises, it is to be hoped, help to develop the students' powers of observation, and also the habit of looking critically at the children entrusted to their care. The students are also taught to test the hearing of children, and one tries to impress upon them the fact that even a slight defect of hearing is of educational importance, and may be responsible for backwardness and inattention. "Adenoids" and "mouth breathers" they soon become familiar with.

With regard to vision testing, the students are, of course, taught the use of Snellen's types. I should like to make one remark with reference to the use of this test by teachers. It is now a very common practice for school medical officers to ask the teachers to test the children with Snellen's types, and to report all who cannot read the D = 12 letters (all with vision worse than $\frac{6}{12}$). The parents of these children are then notified that the child has defective vision, and that his eyes should be properly tested. It is apparently taken for granted that children with normal, or nearly normal, vision require no attention. In this way many cases of hypermetropia escape detection, and among the younger children there is no abnormality more common or more important than hypermetropia. In my opinion, if teachers are to be trusted to test vision at all, they should be trusted with the use of a + 1·5 D lens. After all, it requires no great intelligence or experience to follow the direction that every child with good distant vision, *which is not made worse by a* + 1·5 D *lens*, should be reported to

the doctor. In my classes I always find it a striking demonstration to select a hypermetropic child and an emmetropic student. The vision in student and child alike is ascertained to be $\frac{6}{6}$. With a strong plus lens the child's vision is still $\frac{6}{6}$; the student's, perhaps, $\frac{6}{36}$. Evidently, though both have normal vision, their eyes must be very different.

To carry out successfully a course on school hygiene on the lines indicated it is obvious that a good deal of "clinical material" is necessary. It may be asked whether it is not difficult to obtain this. I have not found it so. It is evident that the school teachers realise the practical importance of the subject, and I take this opportunity of thanking them for the readiness with which they give me any assistance in their power. One might expect that there might be some objection on the part of the children to be used in this way, but one finds, on the contrary, that they tend to regard the whole performance as something of a "lark," and are eager to come back again. For my own part, I try to avoid making undue use of any particular school, and I select my material, as far as possible, from the younger children. It is advisable to use the younger children for two reasons—because the teachers are less likely to object to their missing an hour's work in school, and because the children themselves are less self-conscious and less liable to take exception to any remarks which may be made about them by lecturer or students than older children would be.

For obvious reasons, the children used in this way are never asked to undress, even partially. Undressing would be of no particular advantage in most cases, for one's aim is to help the students to form a habit of observing children just as they see them in class. Occasionally, however, I have demonstrated, for example, the movements of the thorax or the action of the muscles in particular exercises on the living subject. For such purposes there is no difficulty in getting one or two boys to volunteer—it is wonderful what a boy will do for twopence!—and those who are accepted are required to obtain their parents' consent. The medical inspection of the children attending the school at Moray House has afforded an opportunity for a few of the students to see this form of medical work in progress. Greater advantage of the systematic medical inspection will be taken in future.

In conclusion, I may say that I have not attempted to give a description of the entire course in hygiene, but merely to give some idea of the kind of instruction the students are receiving and the methods of teaching in use.

THE INFLUENCE UPON VISION OF THE INCREASING YELLOW COLOURATION OF THE LENS.

By WILLIAM GEORGE SYM, M.D., F.R.C.S.,
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THE lens of a child, whether it be cataractous or not, is "water" coloured; that of an old person is yellow—a straw-yellow, or red-yellow, and, roughly speaking, the older the person the yellower the lens, whether it be cataractous or not. Indeed in the case of some patients with cataract the nucleus actually passes from yellow to brown, sometimes so deep and intense as to be spoken of as "black." It has been suggested that in the case of certain artists advancing years and the consequent increasing yellow tint of the lens have exercised an unfavourable influence on the accuracy of their interpretations of nature. To this point we shall return presently.

An article by Hess of Würzburg (*Archiv. für Augenheilkunde*, lxiii. 2) has recently appeared which deals with this question, in which the author details certain conclusions at which he has arrived by following a method of examination not previously attempted. To understand his results we must first deal more particularly with the problem itself. One ought, as a preliminary to making investigations along these lines, to have the eye well adapted for darkness as it is called, that is, one ought to keep the person about to be examined in complete darkness for some time—twenty to thirty minutes or more—before exhibiting to him the test apparatus. To an eye thus adapted any light, no matter of what hue, appears colourless provided its intensity is sufficiently low: if we present to it a white surface reflecting back to the eye very feeble blue or red or yellow light, it will still appear colourless, and indeed, given an intensity low enough, the whole spectrum will appear as merely a colourless band. If we arrange matters so that the white surface reflects a slightly stronger but still feeble light of faintly blue tint, it will appear gray, as, should the lens be at all yellow, certain of the blue rays will be absorbed or "choked off" by it, the surface thus appearing duller or brighter according as few or many of the rays make their way to the retina. If, on the other hand, the surface is made to reflect reddish-yellow rays, these, passing through the lens without sensible diminution, will not vary as to intensity with the yellow colour of the lens.

Hess's idea, then, is to contrast two such illuminated surfaces seen simultaneously by the eye under examination. In arranging his

apparatus he has been careful to avoid the error which would be introduced were the contrast made with the macula, which is itself yellow coloured. The essential part of the instrument employed is an aperture in a screen, the aperture covered by a reddish-yellow and a blue glass meeting in a vertical line. The eye looks through the two portions of the aperture simultaneously, receiving light from a white surface behind each. Each of the white surfaces is illuminated by a separate lamp, whose distance from the surface can be varied at will, facilitating alteration of the degree of illumination in the right and in the left halves of the pupil. A normal person first satisfies himself (after dark adaptation) that the two portions are equally bright, and the white surfaces equally illumined: if the patient then finds that with the two lamps in the same positions the red-yellow half seems more brightly illumined than the other, this will mean that blue rays are being obstructed by the lens, that, in other words, his lens is beginning to become yellow. As a matter of convenience the illumination of the red-yellow half is kept constant, that of the other only is varied by the approach or recession of its lamp.

A point of considerable interest became manifest as the tests were carried out, namely, that once the equality standard for a given eye was fixed, the margin of variation was very limited, *i.e.* the eye was very susceptible to the slightest increase or diminution in the blue light, and detected the alteration with remarkable delicacy.

Hess next turned his attention to the examination of lens-less eyes, in which no absorption of blue rays could take place, and was able to establish a standard of "specific absorption" for any eye. He found, for example, that his own lens absorbed nearly one-fourth of the blue light employed. He was thus supplied with a check upon any variation which might occur in the illuminating power of the electric lamps employed.

Hess found further that while the yellowness (or blue-absorbing quality) of the lens varied very considerably even in persons of the same age, there was clearly a tendency for it to increase with advancing years. Thus, testing twelve persons under fifty years of age, blue absorption never rose to one-half in any instance, while of eight others above fifty in seven it was above one-half. In none of these, be it understood, was cataract present, but as showing the extent to which this colour change may vary in the clear lens he states that in the series of twenty persons the minimum was 0·10 and the maximum 0·85.

He was so fortunate as to be able to contrast the two eyes in one or two persons who had undergone extraction of cataract in one eye (with a good visual result) and who had, in each case, a clear lens in the other eye. One of these persons was an artist, aged 57, who, being a trained observer of colour, was able to give valuable information; his remaining lens absorbed more than two-fifths of the blue light. The effect of this was at once shown when a strip of paper was presented first before one eye and then before the other; according to the one eye it was white, according to the other, yellow. Hess caused to be constructed a graduated wedge of yellow glass, by means of which he could demonstrate the amount of yellow in the lens of any person; thus the blue-absorbing index was obtained, as above indicated, for patient and observer. The wedge was then slipped in front of the observer's eye as far as was necessary to reproduce the condition present in the patient's. This gave a visible demonstration of the yellowness of his (the patient's) lens.

Commenting upon this highly interesting work of Hess's, Priestley Smith points out with justice that the fact that as an artist grows older his lens becomes more yellow, more blue-absorbing, does not mean that he will necessarily interpret nature falsely on his canvas, as has been somewhat rashly assumed by certain writers, for the fate of the blue rays in his studio is exactly the same as their fate out of doors; the "blueness" of each will be reduced below the normal for a younger man, and if out of doors his lenses admit to the retina a larger proportion of yellow rays, the same will be true of his canvas. But if in his studio he endeavours to reproduce the intenser blue which dwells in his memory of former days, he will be apt to overload his picture with blue pigment, to the detriment of its truth to nature.

RÉSUMÉ OF RECENT LITERATURE ON THE DEVELOPMENTS OF INTRA-THORACIC SURGERY.

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THE beginnings of intra-thoracic surgery came with the invention of the Breslau cabinet, which Sauerbruch described in 1904 (see this *Journal*, December 1908). This cabinet is in reality a specially constructed room, large enough to admit the operator, the assistants, and all the necessary equipment for the operation, in addition to the body of the patient. The head of the patient projects outside, and an air-tight rubber collar fits round his neck. By means of a pump, the air in the chamber is exhausted sufficiently to prevent collapse of the lungs when the thorax is opened. The negative pressure required is approximately equal to a column of mercury seven millimetres in height. The anæsthetic is administered outside the cabinet under atmospheric pressure. Sauerbruch showed that collapse of the lungs could also be prevented by positive pressure, *i.e.* by raising the intra-bronchial pressure above that of the atmosphere; but the results were not so good as with the Breslau cabinet.

The published records of the operation of total pneumectomy in dogs bear out the advantages of the negative pressure method. Thus Meyer had only 4 deaths out of 22 operations, whereas with the positive pressure method Robinson had 12 deaths out of 15, Mayer 15 out of 17, and Haecker 34 out of 38 (Flint, *Yale Medical Journal*, February 1910).

Sauerbruch and Robinson (*Annals of Surgery*, March 1910) have proved that the higher death-rate with the positive pressure method is largely, if not wholly, due to the transudation of fluid into the empty pleural cavity. They enumerate the causes of death in lung operations—(1) During the operation, from reflex stimulation of the vagus, resulting from the inclusion of branches in the ligatures. (2) Within three days, from septic infection of the pleura. (3) Between the sixth and the eighth day, from tension-pneumothorax and mediastinal emphysema. The condition is due to leakage of air from the stump of the bronchus. To prevent this, various methods of closing the stump have been adopted: cauterisation of the mucous membrane, with suture of the end; superimposed ligatures; suture of lung or mediastinal tissue over

the stump; crushing of the cartilage, and invagination of the softened end like the stump of an appendix. (4) Between the third and fifth day, from transudation of fluid into the pleural cavity, dyspnœa, and exhaustion. The fluid, which is sterile and clear or slightly turbid, displaces the heart, and compresses the remaining lung. After removal of a lung, a considerable space has to be filled up by approximation of the walls, elevation of the diaphragm, and expansion of the other lung, which pushes the heart and vessels to the empty side. The filling of the space begins at once in young dogs, is already marked in twenty hours, and is completed in one to four weeks. If the closure is prevented, either by rigidity of the thorax in older animals, or by inflammatory deposit in the connective tissue of the mediastinum, a transudate is poured out, and it gradually increases and presses on the heart. The best conditions for closure of the cavity are—(1) Non-rigid thoracic walls and mediastinal septum; (2) low pressure in the empty cavity. The second condition appears to be the more important, as the transudation has never occurred after an operation conducted under negative pressure. With the positive pressure method, on the other hand, atmospheric pressure exists in the cavity at the end of the operation, the compensatory occupancy of the space is prevented, and the transudation of fluid occurs. This was the cause of death in eighteen dogs out of thirty-eight operated on under positive pressure. It may be obviated by closing the chest wall while the remaining lung is distended, but the increased pressure in the alveoli disturbs the circulation in the lungs, and throws extra work on the heart. Flint (*loc. cit.*) establishes the pressure difference at the end of the operation more simply by aspirating the space.

Robinson and Sauerbruch (*loc. cit.*) compare several methods of performing extirpation of the lung—(1) Simple total extirpation through an incision in the fifth intercostal space, with primary suture of the wound; (2) a two-stage operation, with transplantation of the whole lung upon the thoracic wall and subsequent amputation; (3) total extirpation plus thoracoplasty, to diminish the size of the cavity which is left. They found that the resection of two ribs was insufficient, and an extensive mobilisation of the chest wall produced fatal dyspnœa. The most successful results were obtained by resecting four ribs. The two-stage operation was unsatisfactory, especially when it was not combined with thoracoplasty, as the traction on the lung, and the consequent displacement of the heart and great vessels, sometimes proved

fatal. Even when this did not occur, the exposed lung usually became gangrenous, and it was difficult to reach healthy tissue through which to operate.

If thoracic surgery is to be possible outside large and wealthy hospitals, it would appear that the positive pressure method must be employed. For this two types of apparatus have been devised—(1) A chamber for the head of the patient and the anæsthetist, in which the air is under pressure; (2) an air-pump by means of which compressed air, mixed with the anæsthetic, is forced down through a tube placed in the air-passages. The constructional details do not lend themselves to description without illustrative figures, but the main principles will be readily understood.

As an example of the first type, we may take the head chamber described by Robinson (*Surgery, Gynecology, and Obstetrics*, February 1910). It consists of two boxes, the larger for the anæsthetist and the patient's head, and the smaller for two ventilating pumps with a $\frac{1}{6}$-h.p. motor attached to each. In the front of the anæsthetist's chamber are the rubber-lined aperture for the patient's head, and a small window through which the surgeon may see the water manometer hung inside. Two speaking tubes allow of communication between the anæsthetist and the operator. On the left wall of the cabinet is an air-lock, for the exit of carbonic dioxide and anæsthetic fumes. Below it a large rubber glove is cemented into a small aperture; by pushing his hand into it the anæsthetist can control the switches and rheostat on the top of the pump-box. Lower still on the same wall are two holes through which the efferent tubes of the pressure ventilators reach the cabinet. In the interior of the chamber are a rest for the patient's head, a stool, and a shelf for the anæthetist's armamentarium. Two pumps are provided in case anything goes wrong with one, and to lessen the noise. The cost of the apparatus is between £60 and £65.

The second type of the positive pressure apparatus is exemplified in its simplest form by the so-called Meltzer-Auer instrument, by means of which a mixture of air and anæsthetic is administered by tracheal insufflation. Meltzer (*Berlin. klin. Wochenschr.*, 28th March 1910) has only employed the apparatus on animals. After full narcotisation, a catheter or stomach-tube with a terminal opening is passed through the larynx to the bifurcation of the trachea. Its diameter must not be more than two-thirds of the diameter of the laryngeal lumen, *i.e.* $\frac{5}{16}$ to $\frac{1}{2}$-inch in the human subject. The outer end of the tube is brought through a hole in the mouth-gag, to which it is attached by a thread, and joined to a T-tube, of which one limb is connected to a manometer, and the

other to a flask containing ether. This flask is in turn connected to the bellows by a long thin tube. From the bellows the stream of air may be transmitted either to the flask or directly to the trachea.

With this apparatus Meltzer has performed many experiments in animals without any ill effects attributable to the method. No case of pneumonia, bronchitis, or lung emphysema occurred, and no aspiration of solid particles which were intentionally placed in the pharynx took place. There was never any vomiting during anæsthesia, even when apomorphin was injected. Anæsthesia was always quickly produced without struggling, and consciousness quickly returned at the end. Meltzer has never succeeded in fatally poisoning a dog with ether thus administered, and a great excess of chloroform was required. Further, if an overdose of ether sufficient to stop the heart was given by the ordinary closed method, tracheal insufflation of air or oxygen was successful in starting it again — in several cases after fifteen minutes. The constant stream of air got rid of the excess of ether, and no accumulation in the lungs was possible.

Though the extreme simplicity of Meltzer's apparatus is attractive, there are several objections to its application to operations on the human subject (Mayer, *Medical Record*, 19th March 1910). The mouth is not free and accessible at all stages of the operation. The stream of air transmits to the lungs the vibrations of the bellows; a constant pressure can only be maintained if an equalising chamber is inserted between the bellows and the trachea. For a long operation the working of foot-bellows is impracticable, and an air-pump worked by a motor becomes necessary. The air must be warmed and filtered before it reaches the tube. Hence the simplicity of the apparatus is only apparent. In addition, the introduction of a cannula through the larynx and trachea produces irritation of the mucous membrane and an immediate secretion of mucus, which, if it lies at the foot of the catheter, may be sucked into the lung. Finally, intubation requires experience in every case, and may be impossible in severe cases of dyspnœa.

The modifications to meet the exigencies of human surgery are embodied in the apparatus devised by Elsberg (*Medical Record*, 19th March 1910), who has worked with Meltzer. In it all the objections of the simpler apparatus are apparently avoided, except the intubation of the trachea, which is, however, the most serious of all. It is still doubtful whether the method of tracheal insufflation will ever commend itself to the great body of surgeons.

MEDICAL EDUCATION.

In view of the efforts at present being made to improve the medical curriculum, and in other ways to reform the teaching of medicine, it may not be without interest to place before our readers some observations made by Mr. Syme on this subject in 1863. In a prefatory note to his printed form of address, Mr. Syme says:—"Having lately endeavoured to explain the difficulties which are at present experienced by teachers of practical departments in a medical curriculum—from the multiplied courses of lectures, the extension of their respective subjects, and the frequency of distracting examinations, I now beg to offer some suggestions for the remedy of these evils. It is my sincere belief that the measures to be proposed, while very beneficial to some, would not be injurious to any of the interests concerned. But in expressing this persuasion, I must disclaim any sympathy with those who think that the pecuniary considerations of individuals or corporations should stand in the way of what is advantageous for the public or the profession."

Observations on Medical Education.

(*Delivered at a Conversazione of the Royal College of Surgeons, on the 17th December* 1863.)

During the last session of the Medical Council I proposed the following resolutions, which were seconded by Dr. Christison, and agreed to unanimously:—"That the Medical Council resolve to take into consideration at the next meeting the propriety of recommending a reduction in the number of courses of lectures which the regulations of the various licensing boards at present render obligatory." "That, with the view of facilitating the consideration of this subject, the General Council request to be favoured with the opinion of the bodies in Schedule (A) on the possibility and propriety of this before next meeting."

As the licensing bodies will be expected to express an opinion on this subject before the next meeting of Council, I venture to hope that some observations with regard to the points in question will not now be considered out of place; and I further trust that the circumstance of having been constantly engaged in teaching anatomy or surgery during the long period of forty years, together

with the nature of my clinical duties, which, by establishing an intimate relation with students, has enabled me to become well acquainted with their feelings and difficulties, will be accepted as a sufficient apology for my present attempt.

To any one at all acquainted with the progress of medical science in recent times, it must have been obvious that a period was approaching when the load upon students' memories would become so excessive as to require some measure of relief. That the state of matters has actually arrived at this condition very plainly appears from what took place at the last meeting of the Medical Council, when, from England, Scotland, and Ireland, there was a strong expression of desire that the attention of licensing boards should be directed to the evils which result from the present system of over-teaching. It is indeed only necessary to compare any department of the curriculum as it was thirty or forty years ago with what it is now, to perceive the enormous difference which has been gradually introduced between the former and existing amount of burden imposed upon the memory of a candidate for medical honours.

At the time I studied it, chemistry was a science that could be easily comprehended by any ordinary degree of intelligence, and all its details lay within the limits of a moderate compass; but now, instead of being merely a branch of general knowledge, it has spread over a field of such boundless extent as to require the most complete devotion of time and talent for its successful cultivation. Botany, also, in my day was a most agreeable recreation, unfolding the structure and use of each part in the vegetable economy, explaining the relation of flowers and fruit, and teaching the classification of plants according to the natural and artificial systems: all the information thus acquired being not only interesting in itself, but serving as a useful exercise for the memory, and preparation for more serious study. Now, the case is very different; and botany, I find, has become one of the most oppressive weights on a student's mind. Indeed, the mere terminology for describing the differences of its microscopical objects has swollen into volumes of formidable dimensions. In human anatomy the expansion of ideas has been no less remarkable. Dr. Barclay used to compare modern anatomists with the stubble geese which gathered the grains left by the reapers—such as Vesalius and Fallopius, and the gleaners, under whom he ranked the Hunters and Monros. But the anatomists of our day have far surpassed the stubble geese, since, not satisfied with what was

found on the surface, they have turned up the soil, sifted and scrutinized it, in order to discover if they could how it made the corn grow. In other words, by means of their microscopes, they have opened up an entirely new field of inquiry, and thus extended their researches far beyond what the wildest imagination could have anticipated. In the practical subjects there has been a corresponding development; and while we found sufficient difficulty with our three continued fevers of synochus, synocha, and typhus, my colleague, the Professor of Practical Medicine, has placed in the hands of his pupils a printed list of no fewer than eight hundred fevers![1] All the other departments of medicine having been enlarged in a proportionate degree, it is impossible for any one mind to comprehend the whole; and no time being left for observation or reflection, the education for our profession has become an effort of memory rather than a process of mental training. It is the knowledge of this great evil, together with the prospect of its continued increase, which has led the Medical Council to suggest the importance of devising some means of counteraction.

It is evident that there are only two sources from which relief can be obtained. These are—the regulations of licensing bodies for their curriculum and examinations; and, secondly, the conduct of courses by teachers. As no one mind can embrace the whole circle of medical science, it is obviously proper, in legislating for professional study, to provide for the acquisition of what is most essential for the purpose in view, and more especially for that part of it which can be obtained only during the period of education. Of this there are two subjects far surpassing all the others in importance. These are practical anatomy and hospital instruction. It is only by dissecting the body again and again, year after year, that the intimate and lasting acquaintance with its structure which is necessary during a practice of forty or fifty years can be impressed on the memory; while it is only in the hospital that what may be termed the personal knowledge of disease, or that familiarity with symptoms which constitutes the foundation of its diagnosis, admits of being acquired.

Now, it cannot be denied that at present, what with the multiplicity of classes, and what with the frequency of examinations, there is neither time nor freedom of mind allowed for due

[1] I stated this on the authority of a student, but have since been informed that there are *only* five or six hundred.

attention to any sort of practical study. Thus, I find that second and third year students have seldom more than one hour available for the dissecting-room, where they consequently have hardly put on their aprons before it is time to wash their hands. The remedy for this most unsatisfactory state of matters essentially requires a reduction in the number of classes; and for accomplishing this, the corporations are much more favourably situated than the Universities, since they are fettered in making changes by the vested rights of professors, and by the unwillingness of patrons to abolish Chairs in their gift.

In illustration of the difficulty thus experienced, I may relate what happened with regard to the Chair of General Pathology. This Chair, which exists in no other University or school of medicine in this country, was established by Government for the reception of that able and distinguished man Dr. John Thomson. When he retired, as its object appeared to have been accomplished, and as it was deemed a serious encumbrance to our academic curriculum, the following proposal was made by the late Sir Charles Bell, Dr. Christison, and myself. We offered to give a course of General Pathology, not for our own profit, but merely to provide funds sufficient for paying the Professor's retiring allowance, on condition that after his death the chair should be abolished. This offer was rejected by the Town Council, to whom the patronage had been transferred, and the chair is still occupied. But the Colleges of Physicians and Surgeons, being subject to no such restriction, should not hesitate to make the changes that seem requisite; and the latter body having taking a lead in the improvement of professional education, by adding to the extent of its requirements, especially in what relates to preparatory study, has now an opportunity of being still more useful, by pruning it of injurious superfluities.

But whatever may be the inconvenience resulting from a redundance of classes, it shrinks into insignificance when compared with that which is caused by the present system of examination. After thirty years' experience as an examiner, I feel quite satisfied that these means of ascertaining the extent of qualification are productive of little good and very great harm, since they afford no trustworthy criterion of real knowledge, and most seriously interfere with the concentration of mind requisite for obtaining a firm grasp of it. The late Professor of Botany happening one day, while an examination was in progress, to be called away, Dr. Thomson and I took his place, and examined four candidates.

We put the most simple questions which any one in the slightest degree acquainted with the subject could not have had the smallest difficulty in answering, but found two of the four so entirely deficient that we were constrained to reject them. The very next day these gentlemen appealed to the Professor, and passed triumphantly. As a contrast to this case, I may mention another which occurred lately. A gentleman of good talents and studious habits had distinguished himself at one of our Universities in various departments, but especially anatomy, for his proficiency in which he possessed strong expressions of the Professor's approval. He then presented himself to an examining board in London, and, instead of passing with the distinguished honour that his friends expected, was ignominiously rejected on anatomy.

The explanation of such results is, that at the usual age of a candidate the memory is so retentive that it may be stored for a short period with almost any amount, not of real knowledge, but of answers to questions, while a desire on the part of an examiner to pass beyond the limits of such preparation may suggest inquiries very perplexing to a well informed student. Of the two cases just mentioned, the first is an example of the former, and the second an illustration of the latter source of fallacy. In order to avoid this uncertainty, it has been proposed to give these exercises a practical character by examining on cases in the hospital. But this is worse than absurd, since, while all that is done for the good of patients may and ought to be employed for the instruction of students, humanity forbids the use of their bodies merely for such a purpose. There could not, indeed, I think, be any procedure more shocking than propping up a poor creature suffering from disease of the lungs, and hammering his chest for the recognition of diagnostic sounds as an academic exercise, or committing a fractured limb to the manipulation of unpractised fingers for the detection of its characteristic crepitus. Besides, candidates for a license do not profess to be practitioners, and therefore could not with propriety be submitted to an ordeal of this kind.

But it is the second objection to examinations which I have mentioned, or their interference with study, that demands the most serious attention. The subjects to be inquired into are now so numerous and extensive, that they are necessarily divided and taken at different periods of the student's progress, so that he is never free from the dread of a coming trial. The inevitable effect of this is, that while professing to study one thing he is thinking

of another, and, from being thus distracted, instead of acquiring sound knowledge with a healthy appetite, slavishly gets up the answers which he is led to expect will be required from him. There is no year free from this disturbing influence: and the demonstrator of anatomy, Mr. Turner, informs me that he has remarked a progressive falling off in the dissecting-room since the new regulations came into force, and more particularly says, that many first and second year's students assign as the reason for not dissecting at all, that they have to pass the preparatory, or elementary professional examination. This interference with study is, if possible, still more injurious in the third year,—that most important of the whole, when the student, having gone through the elementary departments, enters upon the practical subjects of his profession. For the first six weeks—that is, from November to Christmas—he may show some interest in his pursuits; but then spring approaches with all the looming horror of an examination in anatomy, chemistry, and physiology. From that time he relaxes his attention, becomes listless in his demeanour, and broods incessantly over the impending crisis of his fate. Thus he passes on, with a no less loaded memory than unfurnished mind, to join the rank of mediocrity, beyond which it is difficult to aspire with success under the present system of medical education.

On the whole, therefore, I have no hesitation in expressing my opinion, that the existing plan of examinations should be entirely abandoned. In the first place, because they are altogether inefficient for accomplishing what they profess to do; secondly, because they most seriously interfere with the acquisition of real knowledge; and, thirdly, because there are other means by which they might be superseded with great advantage to all the interests concerned.

I here allude to class examinations, which are now by many teachers conducted methodically through written questions, and record of the answers kept, in accordance with which the certificates of attendance are given. This system, if generally adopted, would afford far better evidence of professional attainments than can be obtained from the plan now followed, while, instead of distracting the student's attention from his proper object, it would prove a constant and powerful stimulus to exertion in mastering each department of the curriculum. From first to last he would thus have but the one object of qualifying himself for the practice of his profession, and not feel, as at present, that he is loading his

memory with a quantity of useless lumber, which must be thrown aside before he can acquire any useful information.

I approach the subject of teaching with the consciousness of being about to tread on tender ground: but, knowing that my opinions on this subject are the mature result of long and careful observation, feel no scruple in freely expressing them.

The great object of teaching is to promote the acquisition of learning; and, unless it accomplishes this, may be regarded as useless, although characterized by the most brilliant eloquence and the profoundest science. It has been too generally supposed that the mere enunciation of facts and opinions constitutes teaching; but this may require for its reception only an exercise of memory, while learning is an act of the mind that may be likened to the digestion and assimilation of bodily nourishment. The teacher should excite and maintain the appetite for this mental food, and supply it in such quantity, quality, and order as may be most conducive to the end in view, taking care not to oppress the memory with unconnected crudities, or confuse it with conflicting theories. He should devote all the talent he possesses to the subject of his tuition, and cultivate it to the utmost of his power, so as to take a position among fellow-labourers in the same field, that may command respect for the opinions which he expresses. But, in addressing his pupils, he should entirely forget himself, and think only of the wants it is his duty to supply. It is to be feared that all teachers do not pursue this course, and that some of them, making the duties of instruction subservient to the gratification of their own self-esteem, or the indulgence of peculiar fancies, not only misspend the time of their pupils, but withdraw their attention from the true path that leads to eminence.

Having now endeavoured to explain the evils which result from a redundant multiplicity of classes, the present system of examinations, and the erroneous conduct of teachers, I may say a few words with regard to the means that might be employed for remedying these imperfections. In the first place, I think it should be made quite imperative to pass the examination for preliminary qualification before commencing the strictly professional course; secondly, I would prohibit this course from being commenced before a certain age; thirdly, I would require three or four years' study in some school or schools possessing a large hospital with ample means for practical anatomy; fourthly, I would require attendance upon all the classes that seemed

really necessary; and fifthly, I would demand from every candidate for a diploma or degree a certificate from his teachers that he had afforded evidence of due proficiency in their respective departments.

But, while trusting so much to the teacher, I would not, as at present, leave him entirely to himself. It is, unhappily, too true that, both within and without the walls of Universities, there has been—and, no doubt, will be taught—not only much nonsense, but doctrines positively injurious in the practice of our profession,—the understanding seeming to be that a teacher, once recognised, should be allowed perfect freedom in regard to the matter of his instructions. Instead of this too-confiding system, I would have every lecturer called upon from time to time, by the body from which he derives authority, to produce a syllabus of his course: and if it should thence appear that he loaded the memories of his pupils with undigested or undigestible details, or allowed an unruly hobby to carry him away from the field of practical utility into the regions of unprofitable speculation, or, still worse, taught doctrines not conducive to sound practice, I would endeavour to correct the evil of his ways by remonstrance, by censure, or, if necessary, by deposition.

Such being the views in regard to medical education which experience and reflection have suggested, I leave the members of my profession to determine how far they merit approval, and how far they admit of application in practice.

Along with the mature opinions of one whose authority on matters of medical education was unchallenged in his day, and whose fame is one of the most cherished traditions of the Edinburgh School, we may give the views, which were entertained by the undergraduates of our University a quarter of a century later, as reflected in a Presidential Address, delivered before the Royal Medical Society by Dr. G. Owen C. Mackness in 1887.

Some of the changes there adumbrated have, in a more or less modified form, been effected within recent years. Others still await adoption.

In placing these expressions of opinions before our readers, we have only to say that we do not bind ourselves to subscribe to them in their entirety. They have an historical interest, and may serve to show that reform in University administration is not effected speedily.

Some of the questions raised still give rise to differences of

opinion, and we are prepared to open our columns to a discussion of the vital questions relating to medical education and University reform which still await decision.

Extracts from Presidential Address delivered before the Edinburgh Royal Medical Society, 18th November, 1887.

Gentlemen,— . . . The subject that I have chosen for my address to-night is the method of teaching at our University of Edinburgh. I would, in the first place, preface my remarks by stating that, although I am going to attack many of our oldest institutions, and to find fault with our methods of teaching, suggesting at the same time what I consider would be improvements on them, it is not because I am not loyal to our Alma Mater. No one has a greater reverence for her traditions, no one can feel more gratitude to her than I do: yet my love is not a blind one, and it cannot hide or gloss over the faults and shortcomings which she undoubtedly possesses. We were told the other evening in the Inaugural Address delivered in this hall that outsiders predict for our medical school death by asphyxia, but we were shown most ably, and I think all will agree, that such a prognosis is not justified by the symptoms. But although we have no fear of asphyxiation, we must look to our general health, or we may find that other schools which are growing up along with us are becoming stronger, while we remain stationary, and cease to develop. Is there not even now in circulation a report that our surgical degree will not be recognised for certain appointments; in fact, that no man with an Edinburgh degree alone need apply for them, for he will not be considered sufficiently qualified to undertake the duties required of him? This report may or may not be true, but at anyrate the mere fact that people dare whisper such a thing surely behoves us to be up and doing; we must not stand idly by while other men without a University degree are placed in the positions that we ought to hold. It is a fact that a large proportion of the men who stand at the head of our profession have received at anyrate a part of their education at this medical school, and it is urged by some that this in itself is a distinct proof of the excellence of our training. Now that our school has grown so popular, and has gained such a world-wide reputation, the methods of teaching which did so well for smaller numbers are found to be unsuitable for the enormous crowd of students who are attracted here; in fact,

if we do not institute some change, we shall find that men who have been trained at smaller schools will be at the top of the tree, while we shall have to be content with taking the lower places.

What improvements then can we suggest? In the first place, the abolition of all professors' fees. By this I mean that, instead of paying to each professor individually a fee for attending his class, as is done at present, the student should pay a fixed sum per annum to the University, and that the money so received should go into the University revenue, out of which the professors should be paid. By paying this annual sum, the student would be entitled to receive a complete education. This is no new idea, it is the method adopted at our English Universities, where it works well, and it is one that has been proposed over and over again here merely to be rejected. The mere fact of its cropping up so frequently shows that there is need for reform, and that this system has some merits in it worthy of consideration. . . . Again, it is urged that this system would prevent the student choosing his teacher in any subject, that he would be almost compelled perforce to attend the professor's lectures on any subject, since having paid a fixed sum for his whole education he would require to pay an additional fee to any other lecturer that he might attend. Such would be the case if other alterations were not made, and so here we must consider the following questions:— What is to be done with the money paid into the University? how is it to be apportioned out? and what will become of the extra-mural teachers on this system? Let us consider the last question first, and it may be done in very few words. The extra-mural classes must die a natural death; they will cease to exist altogether, because there will be no further need for them. Having destroyed the extra-mural classes, it is but right that we should find employment for the large body of extra-mural teachers, which includes so many extremely able men. This might be done by the following scheme:—Let there be a professor of each subject as at present, but let each one have a certain fixed and reasonable income guaranteed to him quite independent of the size of the classes, but rather dependent on the amount of time required to be devoted to the work. Let each professor's appointment be for a period of five years, with possibility, nay even probability, unless he be a failure, of reappointment at the end of that time. At the same time, let each professor have a certain number of assistant-professors under him, whose salaries would be less than the

professors' but not reduced to the starvation limit as is at present done with some of our professors' assistants. These men would be appointed by the University, and not by each professor, and their appointment would be for a period of, say five years, with the possibility of re-election at the end of that time. Here, then, we have employment for extra-mural teachers. . . . Surely, too, we are offering them a better status than they at present enjoy, for they will be recognised by the University, and have a good income guaranteed to them, instead of having, as at present, to hold out all sorts of inducements in order to bid for the patronage of the students, and to lure them to their classes. It may be urged in opposition to this scheme that the extra-mural lectures at present act as a stimulus to the professors by drawing away students if they deteriorate in their lectures. I cannot accept this argument of the spur, but, as I have already stated, if the professor needs such a spur to goad him on to exercise his full powers, it is high time for his removal altogether, as he is not fit to occupy the position he does.

Next, as to the work to be allotted to the professors and assistant-professors; the professor should, I think, deliver a course of lectures on his subject, leaving, however, the more elementary portions to be dealt with by the assistant-professors. . . . The assistant-professors then would go over and emphasise the more elementary portions, thus leaving the professor himself time to go into the higher branches of his subject. We might even hope to get lectures on the more advanced branches of surgery, and so remove the stigma which some are seeking to attach to our surgical degree. They could also deliver courses of lectures on special parts of the subject, as is already being so ably done by the assistants in some of our departments. Of course, it will be said that by this means a number of classes will be increased, and the unhappy student, who already spends most of his day in the classroom, will be so employed still further. On the other hand, we might diminish our lectures considerably if each professor were made to stick entirely to his own subject, and not needlessly encroach, as at present, upon the work of the other teachers. If each professor knew what the others lectured upon, he could omit from his course those parts of his subject which overlapped another subject, and which had already been treated by the professor to whose department it more properly belonged. . . .

There exists a class of men whose eternal gratitude I feel sure I shall earn if I can only find for them some employment.

I refer to the newly graduated of each year, who are turned out yearly in their hundreds. These men are duly qualified (in the eyes of the University at all events), but most of them have only spent four years altogether at their medical studies, and would be thankful for the opportunity of seeing a little more hospital practice were they not driven away from Edinburgh by the necessity of trying to earn a living.

On the other hand, we have the student coming up to Edinburgh, in most cases a mere boy fresh from school, and suddenly thrown into the University, friendless and with no guiding hand to help him; totally ignorant of the ways of the University, of what to study, or how to study. Consequently his first few months are completely wasted; during them he does himself no good, and is a nuisance to his neighbours.

By bringing these two classes together, we may mutually benefit them. Let a certain number of junior graduates be appointed as tutors, who shall each have the charge of about twenty students, and help them during their stay in Edinburgh. I do not refer to the moral charge, as I am a great believer in the freedom of the subject, although here a kind word of advice might often save a good man from going to the bad, were it judiciously given, but I mean that they should have charge of, and direct the course of, their studies. If each of these tutors received a salary of £120 or £150 a year, it would help to keep him in Edinburgh for a year or two, during which he could do some general medical reading, for which the student who is working for his examinations has little or no time, while at the same time he would be able to attend the hospital and gain experience in that way, either general or in some special subject: he would, of course, have to devote a certain number of hours daily to his tutorial duties, but these would leave him ample time to improve his own mind, and to work for himself. Such a scheme would benefit the graduate, while the income offered is so small that none but junior men would be tempted to accept the position, so that there would be no danger of the posts being filled by old fossils whose views have become antiquated, and who have no longer any sympathy with the failings and follies of the student whose ranks they have so long left.

On the other hand, the advantage to the students would be immense. Each man on arriving here and matriculating would be assigned to a tutor, who would take charge of his studies, advise him as to what classes he should attend, what books he should

read, and how he should set about his work. This arrangement would also, I think, tend greatly to promote the social life of the University, a want that is so greatly felt. An essential point would be that the tutor should devote one hour a week to each of his pupils individually, during which he could give an explanation of any difficulty the student had met with in his lectures. This is, I think, especially necessary where, as here, the classes are so large that portions of the lecture which are clear to some of the hearers are bound to be missed by others, since what is easily understood by one person often proves a source of difficulty to another, and *vice versâ*. . . . Another duty of the tutor would be to set weekly examination papers, which he would then go over with his pupil, afterwards showing where he has failed, and how he might have done better in it. This I consider an extremely necessary exercise. Many write their first examination paper in a professional examination and fail to do themselves justice in consequence. Doing well in an examination is an art which requires to be learnt, and is one that can only be acquired after long practice. Our English public schools and Universities have long recognised the necessity of teaching men how to do examinations, and why should we be behind hand, and neglect this part of our training? Lastly, during this hour the tutor and pupil will have an opportunity of discussing medical subjects, than which there is no more useful training. By it a man learns to think and form ideas for himself, to advance a view and to defend it: his views may be wrong, but wrong ideas are better than none at all. If he merely absorbs what is spooned down his throat, and never thinks for himself, he tends merely to become an exact replica of his teacher, and the intelligence which he possesses never becomes properly developed. I can speak from personal experience of these hours spent with one's tutor, for it is a system which has been adopted in a different form at our English Universities, and I can unhesitatingly say that some of the pleasantest and most instructive hours of my life have been spent in this way, hours that I shall always look back upon with pleasure. The meetings are informal. We come together as friends. One's tutor is nearly of the same age as oneself, and was himself only recently a student, consequently there is not the same gulf fixed between us and him as between the professor and student.

There is one more reform that I would touch on briefly, and that is in the method of our examinations for degrees. That there is some need for reform all will grant, if the rumour to which I

have already alluded be true. It would, I think, be better that the professors should not examine, but that outside examiners should be appointed. This is a matter on which I know that there is very great difference of opinion, and the two sides are pretty evenly balanced. Men would not then, as now, feel compelled to adopt the views of their teachers whether they agree with them or not; they would not become mere receptacles for the dogmatic teaching too often poured out by the professors, but would be enabled to take up their own line of thought, and to read more widely. At present, where the professor's lectures are sufficient for examination in most cases, the student reads nothing but those lectures, supplemented, perhaps, with a small cram-book, for he feels that unless he gives the views expressed in those lectures his chances of coming out of the examination furnace unsinged are very small. How often does one hear a man say "I will attend so-and-so's lectures this session; he has been appointed examiner!" This system tends to make the student a mere receptacle for his professor's ideas without giving him the opportunity of thinking for himself; he opens his gaping throat for the food which is prepared for him, all ready cut up into small pieces to fit it, nay, even in many cases half-digested already, consequently his digesting powers are never properly called into play, while his intellectual powers atrophy. . . .

I do not pretend that the suggestions which I have thrown out to-night are the best that can be brought forward; they are merely some stray ideas that have been floating in my own mind for some time, and I thank you for giving me this opportunity of allowing them to see the light of day.

The annual meeting of "The Edinburgh Medical Journal, Limited," was held in April, when the directors were able to submit a very satisfactory report to the shareholders. After writing off a large sum for the amalgamation and preliminary expenses, the company was able to pay a dividend to the proprietors of 8½ per cent. for the year 1909.

Occasionally shares come into the market owing to a death among the proprietors, and it would be well if any registered medical man who desires to have a proprietary interest in the *Journal* would intimate his wish to Mr. George Ross, the Secretary, 13 Castle Street, Edinburgh, when he will be informed if any shares are available.

CLINICAL RECORDS.

RETAINED MENSES IN A CHILD OF FOURTEEN AND A HALF YEARS—SPONTANEOUS RELIEF.

By S. L. CRAIGIE MONDY, M.R.C.S., L.R.C.P.,
Late Clinical Assistant, Hospital for Women, Soho Square, London.

THE following notes on a case that came under my care last November contain points of interest to the medical profession. In the first place, the age of the child and the nature of the case are somewhat unusual; and, secondly, the result was not what one generally meets with.

On 2nd November 1909 a girl of 14½ years was brought to me. Some seven weeks previously, while in the country, she was taken with pain in the lower part of the abdomen, and vomiting. A purgative was administered and she seemed relieved.

She now complained of great pain in the abdomen above the pubes and also in the pubic bones, and said she felt as if there was a "lump in the back passage" which she was unable to pass. She was sick on 1st November and the day I saw her, and was very blanched. The patient being young, I did not make a very thorough local examination, and gave a mild purgative and advised rest in bed. She was brought to me again the next day, 3rd November, the bowels having acted without producing any relief from the pain. There was no rise in temperature, and the pulse was normal. No history of any menstruation having occurred was obtained. I decided now to examine her. The abdomen was tender, especially over the lower part and to the left side, and here I felt a firm, somewhat pear-shaped mass—about two inches in diameter across the top—apparently passing down into the pelvis. There was pulsation over it, probably due to the abdominal aorta. It was tender on manipulation.

Vaginal Examination.—On separation of the labia no hymen was found, and no signs of one having been ruptured. The vagina was very dilated, the rugæ being obliterated, and the cervix uteri was easily seen without the aid of a speculum. A finger inserted just into the vagina came on a firm, though somewhat cystic, mass, and this was very tender. There were no signs of pregnancy, and I could get no history of sexual intercourse, such being denied. The mass felt in the abdomen moved with that in the vagina, and both moved the uterus as seen and felt. Feeling doubtful as to the existence of pregnancy, I told the mother to take the child to hospital next day. Next day, 4th November, she was not well enough to get up, so was not taken to hospital, and during the afternoon the pain got worse.

5th November.—She was very much worse. At 10.30 P.M. the mother came for me. On arrival I was told that the child had been sitting on a chamber—having had very frequent micturition all day—when suddenly she felt as if something broke in her inside, and immediately she passed about a pint of dark semi-fluid blood, and all pain disappeared. On examination of the abdomen the mass was no longer felt, and there was no longer any tenderness. I came to the conclusion that it was a case of retained menses. The child was kept in bed for two days. I have since been told that menstruation recurred about three months subsequently, and again one month after that.

TRAUMATIC HÆMORRHAGE INTO THE MESENTERY—REMOVAL OF CLOTS—RECOVERY.

By ALEXANDER MILES, F.R.C.S.,
Surgeon, Royal Infirmary.

ABOUT half-past seven on the evening of Friday, 27th January 1905, David M., 13 years of age, while at play was pushed against a lamp-post by a heavy lad of 16, who fell against him, striking him with his knee in the region of the umbilicus. He experienced great pain in the abdomen, but was able to walk home, and he immediately went to bed. About one in the morning he became sick and vomited a quantity of greenish bilious fluid. During Saturday and Sunday he complained of some pain in the abdomen, and vomited at intervals, the vomited material being for the most part green, but on several occasions it was said to have been streaked with blood. Owing to the sickness he was unable to take any nourishment, and, as the symptoms did not abate he was brought by his mother to Leith Hospital early on Monday morning—about sixty hours after the accident.

On his admission he looked very ill; the features were pinched and drawn, and the eyes sunken, but he was not noticeably pale. He complained of pain in the abdomen, and soon after admission he vomited on taking a mouthful of water. The temperature was subnormal; the pulse 116, small and feeble; and the respirations 24, shallow, and entirely thoracic. The urine was normal.

The abdomen was retracted, to the extent of being "scaphoid," and it did not move on respiration; the muscles were contracted, but not "boarded," and the hypochondriac and umbilical regions were tender to pressure. The note elicited on percussion was tympanitic, except over an area about the size of one's hand in the region of the umbilicus, where a vague swelling was recognisable, which was dull. In this region there was visible and palpable pulsation. This area was soft and boggy, and suggested the presence of a hæmatoma in the sheath of the rectus muscle. There was no diminution of the liver dulness.

The absence of signs of peritonitis after such an interval of time made it unlikely that any portion of the alimentary canal had been ruptured, and there was no evidence of internal hæmorrhage sufficient to justify a diagnosis of laceration of the liver or spleen; nor was there any reason to suppose that the kidney or bladder had been damaged. Although no positive diagnosis was made, as the boy was evidently getting worse, it was decided to open the abdomen.

This was done by an incision through the right rectus muscle, which corresponded to the most salient part of the swelling. There was no mark of bruising on the skin, no effusion of blood into the substance of the muscle, nor any hæmatoma of the abdominal wall. On opening into the peritoneal cavity a quantity of bright red fluid blood escaped. The transverse colon presented at the opening and showed several superficial patches of ecchymosis scattered over its peritoneal surface. Similar patches were found on the cæcum and ascending colon. The great omentum was short, but there was no hæmorrhage in its substance.

On exposing the mesentery of the small intestine, a cake-like mass of clotted blood, about the size of the palm of one's hand, and nearly an inch thick, was found between its layers, and extending as a thin film on to the anterior aspect of the adjacent coil of small intestine. This hæmatoma of the mesentery lay over the abdominal aorta, and received from it a transmitted pulsation. The small intestine was contracted and empty. There was a considerable quantity of dark fluid blood in the pouch of Douglas, but no clots were found there. There was no rupture of the liver, spleen, or kidney to account for the blood found free in the peritoneal cavity, and it was assumed that this must have escaped from the vessels of the injured portion of the mesentery.

The anterior layer of the mesentery was incised and the clot cleared out; the space was washed out with saline solution, and the mesentery sutured with fine silk. The pouch of Douglas was gently flushed out with saline solution, and the abdomen closed. The patient made an uneventful recovery, and left hospital in three weeks.

MEETINGS OF SOCIETIES.

Edinburgh Medico-Chirurgical Society.

A MEETING was held on 4th May, Dr. Byrom Bramwell, President, in the chair.

Sir W. Watson Cheyne, Dr. A. M'Phedran, and Sir Thomas Clifford Allbutt were elected Corresponding Members of the Society.

Dr. Bruce showed two specimens of sarcoma of the spine. The following specimens were shown by Mr. Miles:—(1) Calculus removed

from bladder of girl, æt. 9, and radiograms showing stone in position. (2) Tuberculous kidney removed by operation. (3) Carcinoma of splenic flexure of colon removed by two-stage operation, with lateral anastomosis. (4) Unerupted canine tooth removed from centre of hard palate, where it formed a hard tumour projecting towards the mouth. (5) Gall-stone removed from hepatic duct.

Dr. Chalmers Watson gave a demonstration of the value of various commercial preparations of lactic acid bacilli. Many of these were quite inert, while the number of bacilli in different tablets even when taken from the same bottle varied greatly.

Mr. Wallace showed (1) a case of fracture of the olecranon after suture. Passive movements were started after five days. The result was satisfactory. (2) A case of Volkmann's ischæmic paralysis of the forearm. There had been a compound fracture of the forearm five years before, and the condition had started a month later. Mr. Wallace had removed the proximal bones of the carpus, and there was now some power of movement of the fingers. (3) A patient after nephrectomy for hæmatogenous infection of the kidney. (4) A patient after operation for undescended testes. A hernial sac had been found on each side at operation.

Dr. George Mackay showed a patient after removal of a foreign body from the anterior chamber of the eye, with unimpaired vision.

Dr. Norman Walker showed a case of xeroderma pigmentosum which had been treated with carbonic acid freezing.

Drs. J. S. Fowler and Carnegie Dickson communicated a paper on "Tuberose Sclerosis." They described a case occurring in an infant, aged one year, with no history of previous ill health. The child suddenly began to suffer from fits, and became apathetic and apparently imbecile. The symptoms suggested tuberculous meningitis. The cerebro-spinal fluid showed a flaky coagulum some time after withdrawal. Empyema supervened and the child died.

At the *sectio* multiple hard tumours were found in the cerebral cortex and projecting into the ventricles. There was also a rhabdomyoma of the heart.

The majority of the recorded cases had been in children, but in one case the disease had occurred at the age of 37. Adenoma sebaceum occurred in 17 out of 26 cases. Dr. John Thomson said he had seen a case of adenoma sebaceum without mental impairment. Dr. Norman Walker also recalled a case of adenoma sebaceum in which there was average intelligence, and the patient when last heard of was alive and well at the age of 22.

Mr. Alexander Miles read a paper on the "Treatment of Acute Gonorrhœal Urethritis in the Male by Passive Hyperæmia," which appears at p. 493.

Professor Caird asked what proportion of cases passed from anterior

to posterior urethritis, and inquired whether threads were present after six weeks.

Mr. MacGillivray said he did not agree that injection treatment was inadequate, and asked when the cocci disappeared from the discharge. Mr. Miles, in reply, said that only ten out of 300 cases showed signs of posterior urethritis. Patients did not remain long enough in attendance to afford data regarding the persistence of the gonococci.

Drs. Bruce and J. S. Fraser read a paper on a "Case Presenting Ménière's Symptoms along with Facial Paralysis." After death, sections of the petrous bone showed a hæmorrhage between the epineurium and the trunks of the seventh and eighth nerves within the internal auditory meatus. Sections of the cranial nerve nuclei showed that there was degeneration limited to the facial nucleus. The nucleus of the twelfth was healthy, a fact indicating that this nucleus does not give off fibres to the facial nerve.

RECENT LITERATURE.

CRITICAL SUMMARIES AND ABSTRACTS.

MEDICINE.

By W. T. RITCHIE, M.D., F.R.C.P.

Arterial Sclerosis.

The dubiety as to the essential nature of arterial sclerosis and atheroma, and the diversity of opinion regarding the fundamental changes causing these affections, are matters of considerable practical importance, for the physician's conception regarding the nature of arterial disease cannot fail to influence his diagnosis and treatment.

The nature of the arterio-sclerotic process is discussed by Professor Adami, who points out that in the majority of deaths after the age of forty years arterial sclerosis is the fundamental morbid affection. In cases of cardiac incompetence, aneurysm, chronic bronchitis and emphysema, cerebral hæmorrhage and chronic Bright's disease, the terminal event is only the outcome of one common underlying factor —arterial disease.

According to Adami, the different forms of arterial disease affecting the aorta and its larger branches are—(1) *Ordinary nodose arterio-sclerosis.* This is the most frequent form, and most often passes into the condition of atheroma and of calcification of the intimal plaques. (2) *The uncomplicated senile form*, in which, clinically, hardened and at

times "pipe-stem" radial arteries are found in association with diffuse dilatation of the aorta and with thinning of the aortic wall. The essential change in the radial and other medium-sized arteries is calcification of the media, which, as shown by Russell, is apt to be preceded by a marked hypertrophy of the middle coat. Quite the commonest condition in elderly persons is a combination of the first and second forms. (3) *The syphilitic form*, in which the primary change is a sub-acute mesaortitis followed by intimal overgrowth, and later by degeneration, necrosis, shrinking, and scarring. Turning to the other arteries, Adami divides them, as regards arterial disease, into the muscular arteries and the arterioles. The former may present the same three types of change as occur in the aorta, with, however, less atheromatous and degenerative alterations, smaller plaques, and calcification of the middle rather than of the inner coat. The media may be thin, may present diffuse hypertrophy, or may be degenerated and replaced by connective tissue, and there may be diffuse thickening and overgrowth of the intima. In the arterioles, the muscular hypertrophy of the media may be the dominating change; in another series fibrosis of all the coats is evident; while in association with tuberculosis and syphilis, obliterative endarteritis is the important feature.

Adami's argument is that the one fundamental change common to all these various lesions is a weakening of the arterial wall, and especially of the media. This leads to increased strain upon the remaining coats, and this strain, if not excessive, leads more especially to connective tissue overgrowth. Klotz's experiments show that increased intra-vascular pressure may be the sole cause of medial degeneration in the first place, of giving way of the arterial wall in the second, and of intimal hypertrophy in the third. In syphilitic cases the granulomatous change in the vessel wall is the direct cause of the atrophy and absorption of the media. As regards senile arterio-sclerosis, we may assume that after the age of fifty there is a physiological atrophy of the media, and a normal blood-pressure may then be adequate to cause giving way of the media, with or without consequent intimal hypertrophy. In pre-senile arterio-sclerosis, high intra-arterial pressure alone is sufficient to bring about a nodose arterial sclerosis. It is not necessary for the blood-pressure to be continually above the normal; a transient acute rise frequently repeated will occasion arterial sclerosis.

The onset of arterial sclerosis at or before the climacteric may be explained, according to Schuster, on the hypothesis of a deficiency or failure of the internal secretion of the ovary, and possibly also of the thyroid, leading to supra-renal hyperactivity, and thus to arterial disease.

The Clinical Forms of Arterial Sclerosis.—At the tenth French Con-

gress of Internal Medicine, Huchard, Jaquet, Bard, Loeper, Dunin, and others took part in a discussion on this subject. Huchard recognises two stages of the disease—(1) The stage of pre-sclerosis, in which there are manifestations of toxæmia, but in which no structural lesions can be recognised clinically. In this stage the disease is curable. (2) The stage of arterial sclerosis, with organic lesions of toxæmic origin, which may be recognised by the clinician, but which are incurable.

In the stage of pre-sclerosis, the symptoms are referable to toxæmia, renal insufficiency, and arterial hypertension. Max Frenkel says the patient may have a feeling of oppression while taking exercise, headache, attacks of palpitation, slight cough, vague pains, tingling, cramps, and precordial pain, with a hard pulse and accentuation of the second sound of the heart. Somewhat later the patient is inclined to be somnolent during the day, whereas at night his sleep is broken. The early symptoms mentioned by Sir Lauder Brunton include faintness, palpitation, shortness of breath, fulness in the head, headache, giddiness, transitory aphasia, indecision and irritability. Russell has drawn attention to the importance of contraction spasm or hypertonic spasm of sclerosed cerebral arteries as a cause of transitory paresis and paralysis, and Sir Lauder Brunton suggests that many of the phenomena accompanying migraine may be explained in a similar manner. Headache, vertigo, and transient attacks of unconsciousness are also mentioned by Cramer as early indications of cerebral arteriosclerosis. Lauder Brunton suggests that the giddiness and faintness may depend upon commencing cardiac failure, so that the heart misses a beat or two and the pressure falls. The transient attacks of unconsciousness are described by Herz as coming on suddenly without any warning, or as being preceded by vertigo. In either case the attack is only a momentary one, and, according to Herz, it is the direct manifestation of an extra-systole. The brief duration of the unconsciousness, the functional condition of the heart, and the recognition of extra-systolic irregularity enable us to differentiate such attacks from the graver seizures of the Adams-Stokes syndrome.

Describing the nervous manifestations of incipient arterial sclerosis, Jaquet says that the person's character changes; he becomes irritable, is easily tired, becomes unable for sustained work, and is unable to concentrate his attention for any length of time. His intellectual productivity lessens; he becomes forgetful of names and figures. His head feels as if it were compressed in a vice; vertigo is brought on by any sudden change of posture; buzzing noises in the ears are frequently complained of, and intolerance of even small quantities of alcohol is a characteristic feature of the malady. It is evident that, as pointed out by Jaquet, Frenkel, and others, the cerebral symptoms of early arterial sclerosis may be simulated closely by neurasthenia.

Pre-sclerosis being the initial stage, three further phases of arterial sclerosis in relation to the heart are described by Huchard. The second phase is characterised by manifold lesions of the blood-vessels, the heart, and the kidneys; by dyspnœa due to emphysema, with or without chronic bronchitis, or to cardiac insufficiency, but more frequently to toxæmia of renal or gastro-intestinal origin; by the bruit de galop; by a tendency to dilatation of the heart, and to visceral or peripheral œdema. Even when there is no peripheral œdema, a reduction of the patient's weight after he has been taking digitalis indicates that he had visceral œdema. Cowan finds that cardiac and renal symptoms form the bulk of the complaints; but when the cardiac evidence is lacking, a correct diagnosis may only be possible from observation of the arteries, the pulse, and the fundus of the eye. The ocular manifestations of arterial sclerosis described by Ballantyne include irregularity in the calibre of the retinal arteries, constriction of the veins where they are crossed by rigid arteries, undue tortuosity of the vessels, retinal hæmorrhages, and white patches of retinal degeneration. In the third phase of cardio-sclerosis described by Huchard, the symptoms are mainly those of mitral disease; while the fourth phase is that of the seriously dilated heart associated with ascites, hydrothorax, and visceral congestion.

One symptom of arterial sclerosis to which considerable attention has been directed recently is that spoken of as angina abdominalis. The striking feature described by Koloman Müller is paroxysmal pain in the region of the stomach or about the umbilicus, with meteorism. The onset of the paroxysm bears no relation to the taking of food, but Kreuzfuchs observes that the attacks tend to come on when the patient assumes the recumbent posture.

Treatment of Arterial Sclerosis.—In the stage of pre-sclerosis, the toxæmia, Huchard says, is best relieved by putting the patient on a milk or a lacto-vegetarian diet. This alone will frequently lead to the entire disappearance of the symptoms. Lauder Brunton is of opinion that whenever the rise of arterial pressure begins, the amount of butcher meat should be lessened, and its place taken by fish or fowl, eggs and cheese, farinaceous food and vegetables. Alcohol should be allowed only in moderate quantity, and moderation should be enjoined in the use of tobacco, tea, and coffee. The renal insufficiency will be beneficially influenced by the change of diet, but Huchard also recommends the use of diuretics such as theobromine; while for the relief of the arterial hypertension he recommends massage, gymnastics, hydrotherapy, diuretic mineral waters such as those of Evian or Vittel, and vaso-dilators such as the nitrites and thyroid extract. Leopold Levi likewise advocates the employment of thyroid extract in cases of arterial sclerosis. Dunin does not find that arterial tension can be appreciably modified by a lacto-vegetarian diet, but if the

patient be corpulent any diet that will reduce his weight helps to lower the tension. Loeper regards lime salts as particularly harmful in cases of arterial sclerosis. Bread is therefore more likely to be injurious than meat; and it is advisable to give sodium bicarbonate and sodium chloride so as to render the lime salts more soluble, while free purgation aids their elimination from the bowel. Lauder Brunton says that mercurial purgatives given twice a week or every other night, followed by a saline in the morning, have a distinct power to lower arterial tension. Huchard finds that his patients derive no benefit from high frequency currents, and in his opinion iodides are not only useless but may even be harmful in the stage of pre-sclerosis. In the later stages, however, Huchard does give small doses of iodide. When the heart is dilated and the patient dropsical, Huchard believes that a milk diet and diuretics are harmful. The patient should then be put on a dry diet and the quantity of fluid that is taken should be reduced to a minimum.

References.

Adami, *Amer. Journ. of the Med. Sci.*, 1909, vol. cxxxviii. p. 485. Ballantyne, *Practitioner*, 1909, vol. lxxxiii. p. 629. Cowan, *Ibid.*, 1909, vol. lxxxiii. p. 614. Cramer, *Deutsche med. Wochenschr.*, 1909, xxxv. 1595. Dunin, *Sem. méd.*, 1908, xxviii. 439. Frenkel, *Gaz. méd. de Paris*, 1909, lxxx. 5. Herz, *Wien. klin. Wochenschr.*, 1910, xxiii. 159. Huchard, *Maladies du Cœur, Artériosclérose*, Paris, 1910. Jaquet, *Sem. méd.*, 1908, xxviii. 437. Kreuzfuchs, *Deutsche med. Wochenschr.*, 1910, xxxvi. 306. Lauder Brunton, *Birmingham Med. Review*, 1909, N. S., vol. xiv. p. 191. Levi, *Bull. de la Soc. de l'Internat des Hôpit. de Paris*, 1909, vi. 255. Loeper, *Sem. méd.*, 1908, xxviii. 439. Muller, *Allg. Wien. med. Zeitung*, 1909, liv. 413. Russell, *Practitioner*, 1906, lxxvi. 306. Schuster, *Fortschr. d. Med.*, 1910, xxviii. 257.

SURGERY.

Left-Sided Appendicitis.

Notwithstanding the amount of literature already published on the appendix, there still appear numerous articles of interest on this subject. In the *Berliner klinische Wochenschrift*, No. 5, p. 194, F. Karewski describes ten cases in which the appendix had given rise to symptoms in the left iliac fossa, simulating various other pathological conditions. In three of the ten, however, the diagnosis of appendicitis was made before operative interference. Of the ten cases described one was a child of five, in whom the symptoms simulated tuberculous disease of the spine, with abscess formation in the left iliac fossa. There was no localised kyphosis, but there were signs of old-standing tuberculous glands in the neck. The abscess cavity in the left iliac fossa was punctured, preliminary to the injection of

iodoform emulsion, but as the pus evacuated was not like that which results from a tuberculous lesion, an incision was made, and a perforated appendix surrounded by an abscess was discovered and removed. In another case, a woman, 38 years of age, appeared to be suffering from obstruction of the bowel, the symptoms of which were pain, vomiting, abdominal distension, and no passage of fæces or flatus. On examination a fluctuating tumour was felt above Poupart's ligament on the left side. A diagnosis was made of paralytic ileus with torsion of the pedicle of an ovarian tumour.

On account of the grave condition of the patient a puncture was made through the left vaginal fornix, and a large quantity of pus evacuated. The abscess was then incised and drained, the patient improved, and some weeks later the swelling in the left iliac fossa was found to be due to a collection of pus surrounding the appendix, which was adherent to the left Fallopian tube.

In another case a woman had suffered from an abdominal fistula above Poupart's ligament, of eighteen months' duration, from which fœtid pus escaped. The diagnosis in this case was suppurative salpingitis communicating with the intestine, but an appendix containing pus and a concretion was found adherent to the left tube. Another patient, a man aged 36, whose condition had been diagnosed by a competent authority as a case of neurasthenia, when operated upon was found to be suffering from chronic appendicitis, with the appendix situated in the left iliac fossa. In yet another the symptoms were supposed to be the result of an umbilical hernia.

Although this condition is rare—Karewski met with 10 cases in 1600—it is a possibility which should be kept in view in all cases in which obscure symptoms are referred to the left iliac fossa. It is interesting to note that many of his cases occurred in adults, as a mobile cæcum and appendix are much more frequently met with in children than in adults. GEORGE CHIENE.

TUBERCULOUS RHEUMATISM.

E. Melchior (*Berlin. klin. Wochenschr.*, 14th March 1910) draws attention to the fact that one of the various causes of so-called rheumatism in joints is the tubercle bacillus. He describes the case of a patient who had subacute articular rheumatism with slight fever and pain, but differing from an acute attack of ordinary rheumatism in the fact that there was neither sweating nor erythema of the skin. In some cases complete recovery takes place, in others a certain amount of stiffness remains in one or more of the joints affected. The administration of salicylates has no effect on the condition.

Although Grocco was the first to draw attention to this condition, to Poncet must be given the credit of naming it tuberculou

rheumatism. Laveran described a case in 1876: a man, aged 22, who had suffered from pleurisy when a child, developed an attack of acute articular rheumatism; in a few days this was followed by high fever, cough, dyspnœa and crepitations in the lungs. The patient died fourteen days later, and at the autopsy miliary tuberculosis was found throughout the joints of the body. In another case described by Maylard the condition found in the joints appears, from the description, to have been of a similar nature.

König records an instructive case in relation to this point. A young girl suffering from tuberculosis of the kidney developed an attack of acute articular rheumatism, which subsided in all the joints affected, except the right hip, in which a tuberculous abscess developed. The patient died four weeks later. At the post-mortem examination miliary tuberculosis was found throughout the various organs, in addition to the old-standing tuberculous lesions.

Melchior believes the condition to be the result of an infection through the blood stream. GEORGE CHIENE.

[This condition was described by the late John Duncan of Edinburgh under the term tuberculosis arthritic fever.—ED.]

INTRAVENOUS NARCOSIS.

Fedoroff (*Zentrab. f. Chirurg.*, No. 19, 1910) reports forty-five cases of narcosis induced by intravenous injection of hedonal. The drug was introduced in a $\frac{3}{4}$ per cent. solution in normal saline, and was injected into a vein in the upper arm. In the first twenty-three cases rectal injections of hedonal were also given, but it was found that the only result of rectal injections was to prolong the post-operative sleep, and not to aid in the production of narcosis. In two cases a period of excitement preceded, and in two other cases followed full narcosis. No other bad results were noted. Complete narcosis was produced in from three to eight minutes after injections were begun. Fourteen grms. of hedonal was the largest, 3·8 the smallest, dose required to produce narcosis during operation. The average dose varied from 6 to 8 grms., but cases varied very much, for in one 5·4 grms. sufficed for two hours, while in another 11·4 grms. were used in two hours and fifty minutes. The solution was introduced at the rate of about 100 c.cm. a minute, and injection had to be repeated once, twice, or three times in the course of operation to keep up anæsthesia. The general results were excellent. Sickness and vomiting never occurred, the kidneys were not affected, and patients with advanced arterio-sclerosis tolerated the procedure as well as others. Thrombi formed in the vein used for injection in one or two cases, but never caused any serious disturbance.

J. W. STRUTHERS.

Poisoning Following Bismuth Injections.

Beck (*Zentrab. f. Chirurg.*, No 17, 1910), in a short article on this subject, admits that the injection of bismuth paste is not without danger, because slow, long-continued absorption of considerable quantities of the metal from large cavities can produce toxic symptoms. The first symptom, a slight livid discoloration of the skin, usually appears in the third week, but may show sooner. Later, small bluish ulcerations form on the gums. When the condition progresses, sickness, headache, and diarrhœa set in, the urine contains albumin and casts, the ulceration of the gums extends, the patient gradually gets weaker, and may eventually succumb.

Beck has treated several hundred cases with bismuth injections, and has never had a fatal case of poisoning. He advises that a sharp look-out be kept for the first signs of poisoning, and that when they appear the paste be removed by injecting warm olive oil, which is allowed to remain for twelve to twenty-four hours. The oil makes an emulsion with the bismuth paste, which is removed by aspiration. Removal of the paste with a sharp spoon is not advisable, for it opens up fresh raw surfaces for absorption Beck advises that recent acute suppurative processes should not be treated with bismuth injections, and in cases where doubt exists as to whether the walls of a suppurating cavity are likely to absorb too readily, that a 10 per cent. paste should be used instead of the usual 30 per cent. paste. A light blue discoloration of the gums, without ulceration and unattended by symptoms, is, he says, not to be regarded as a sign of poisoning requiring treatment, for he has seen this in about 20 per cent. of all cases, and especially in cases which benefited markedly by the treatment.

Reich (*Beiträge z. klin. Chirurg.*, Bd. lxv. Heft 1) records a fatal case of bismuth poisoning from Brun's clinique in which 25 c.cm. of a 30 per cent. bismuth paste were injected to promote healing of a pelvic abscess associated with appendicitis. The symptoms of poisoning came on acutely. The granulations became blackish in colour. Rise of temperature, headache, giddiness and general weakness followed. The gums became discoloured and ulcerated, and albumin and casts appeared in the urine. Delirium with hallucinations, tonic and clonic spasms followed, and the skin took on a dirty livid colour. Death took place on the eleventh day. At the post-mortem examination the blood was found to be chocolate coloured, the red cells being largely destroyed. Advanced degeneration was found in the parenchymatous organs, desquamation in the convoluted tubules of the kidneys, with hyaline and hæmoglobin casts and foci of hæmorrhage in the cortex. Capillary hæmorrhages were also found in the spleen. Reich refers to several other cases of fatal poisoning due to the use of bismuth injections.

J. W. Struthers.

The Autoplastic Transplantation of the Extensor and Flexor Tendons of the Fingers.

Von Hacker (*Zentralb. f. Chirurg.*, No. 48, p. 1663) has devised two operations for repair of deficient portions of the tendons of the fingers.

The first method was described in the *Wien. med. Wochenschr.*, 1898, No. 2, and is intended for repair of the extensor tendons. It is suitable for the thumb, index, and little finger, all of which are provided with two extensor tendons. The tendons of the affected finger are exposed at the wrist, and the less important of the two is divided; the distal cut end is drawn downwards and stitched to the periosteum of the terminal phalanx. This procedure was successful in a case in which 5 c.m. of the dorsal extensor expansion over the first interphalangeal joint were destroyed with the overlying skin. The latter was replaced by a flap from the chest wall. For the middle and ring fingers, where there is only one tendon, the operation is modified by splitting the tendon and turning forwards one-half.

The second method described by von Hacker is suitable for both flexors and extensors. The parts of the special extensors of the index or little finger extending from the wrist to the metacarpo-phalangeal joint are used for transplantation. They can be adapted to any of the fingers. The operation is conducted in two stages. For deficiency of the flexor tendons of a finger the technique is as follows:—The tendon to be transplanted is exposed on the dorsum of the wrist and divided. The distal part is pulled out through an incision on the dorsal aspect of the knuckle, and is carried subcutaneously to the flexor aspect of the affected finger. A tunnel is made for the tendon along the finger and the cut end is stitched subperiosteally to the terminal phalanx.

The second stage of the operation is performed fourteen days later after primary healing. The tendon is separated from its attachment on the dorsum and is sutured to the proximal end of the flexor tendon.

This method was successfully employed in the case of a girl, æt. 14, who had lost the flexor tendons two years previously from suppuration of the sheath.

Modifications can be made for different parts, and the following list shows the scope of the operation:—(1) the reformation of the flexor tendons in any of the fingers; (2) for deficiency of part of a flexor tendon in the palm; (3) for deficiency of the extensor tendons either on the dorsum of the hand or finger.

Destruction of a tendon renders the finger useless even although the joints are sound, and amputation is often required. The use of silk or catgut as substitutes for tendons has yielded poor results. Rehn has recommended the insertion of portions of separated tendons or strips of fascia, but the advantage of the two-stage method of von Hacker over other procedures is the retention of the nutrition of the tendon.

James M. Graham.

OBSTETRICS.

By R. G. M'KERRON, M.A., M.D.,
Physician to the Maternity Hospital, Aberdeen.

The Modern Treatment of Labour in Contracted Pelvis.

The treatment of labour in contracted pelvis is at the present moment the most important and pressing problem in midwifery. The introduction of new methods of treatment and the extension which asepsis has permitted in the scope of older methods have led to a gradual modification of the principles on which the management of these cases has long been based. There is evidence of a change of attitude among obstetric teachers; and nothing has contributed so much to this as the improvement in Cæsarean section and the re-introduction and extension of symphysiotomy and pubiotomy. The increased safety of these operations for the mother, and the great saving of infant life which they effect, compel attention and necessitate a reconsideration of the whole question of management.

The extension of these operations has given a stimulus to the study of the many problems connected with labour in contracted pelvis, and it is apparent that the treatment of this complication is now seriously engaging the attention of obstetricians. Several valuable papers on the subject have recently appeared, notably, Schauta's address to the Glasgow Obstetrical Society in 1908, Hastings Tweedy's paper contributed in February to the Obstetrical Section of the Royal Society of Medicine, and a paper by Blacker read before the Harveian Society in March of this year.

The two first-named writers agree in maintaining that the development of aseptic methods makes a greater reliance on surgical measures not only permissible but imperative. But, while Schauta is of opinion that the time has not yet arrived—if it ever will come—for discarding the old established methods, Tweedy, adopting the extreme position of some continental obstetricians, would have them entirely removed from the legitimate measures of treatment in contracted pelvis. Blacker, on the other hand, representing "the caution and conservatism for which the London School of Obstetrics has always been noted," regards with disfavour the attempt to replace obstetric by surgical methods in the lesser degrees of contracted pelvis. Where surgical operations become necessary, he prefers Cæsarean section in almost all cases to symphysiotomy or pubiotomy—the latter an operation which has never, to his knowledge, been performed in London.

The important essential for the precise and scientific treatment of contracted pelvis is early diagnosis, and until the practitioner makes it a rule to examine and measure the pelvis of all primigravidæ several weeks before the end of pregnancy, and to make during labour a careful

estimate of the existing conditions, the present methods of treatment, even craniotomy on the living child, cannot be entirely dispensed with. Cases will continue to come too late for Cæsarean section or any of the modern methods to be safely adopted. If, as Schauta insists, the general practitioner "would get accustomed to recognise at the right time high degrees of contracted pelvis, *i.e.* before the onset of labour, and also to assign all these cases early enough to obstetrical institutions," then might progress be made towards the ideal treatment of contracted pelvis.

In Tweedy's opinion, an accurate knowledge of the pelvis can be obtained only by the use of Skutsch's pelvimeter; but the instrument, besides necessitating a great deal of vaginal manipulation and the use of an anæsthetic, requires an amount of practice that makes it doubtful if it will ever supersede the manual method of examination. The latter, alone or combined with Muller's or Griffith's manœuvre for estimating the relative size of head and pelvis, yields sufficiently reliable information to indicate the line of treatment to be followed. Absolutely accurate measurements are not essential in view of the fact that the size of the pelvis is only one factor. The size of the head cannot, as Tweedy seems to suggest, be neglected.

When the existence of pelvic narrowing has been ascertained during pregnancy, the question to be decided is, How is delivery to be completed? In many cases the decision is easy enough, in others it can be made only after the most careful deliberation and with difficulty. It is in the lesser degrees of contraction that the greatest difficulty will be experienced, and it is in regard to the management of these very cases that the greatest difference of opinion exists.

Till recently cases of pelvic contraction were dealt with in one of the following ways:—In the greater degrees of contraction by Cæsarean section or by the induction of premature labour or abortion; in the lesser degrees by induction of labour, prophylactic version or forceps, and, if they failed, craniotomy. The Cæsarean operation was largely reserved for cases in which the indication was absolute, where it gave the only hope of obtaining a living child, and the alternative was induction of abortion or craniotomy. For the intermediate degrees, induction of premature labour was relied on, while in the lesser degrees either induction was practised or pregnancy was allowed to go to term in the hope that the forceps would succeed; the forceps failing, craniotomy was performed. Where contraction was not recognised before labour, Cæsarean section was undertaken if there was serious narrowing, but only if the case was seen early and the conditions were favourable; otherwise the forceps were tried and followed, if necessary, by craniotomy, even on the living child.

It has, however, long been felt that these methods involved an undue sacrifice of infant life, necessary perhaps at one time in the

interests of the mother, but now no longer justifiable in view of the greatly increased safety of surgical procedures. The latter, it is now generally held, should to an increasing extent replace the older methods. But exactly to what extent is the question at issue. Among continental obstetricians there is manifest a tendency to discard entirely the old obstetric methods of dealing with contracted pelvis, and, in the interests of the child, to subject the mother to the greater dangers of surgical procedures; while in this country, as pointed out by Champneys, "the risk to the mother dominated the practice of midwifery, and the child's life could in no case be balanced against it." Both on sentimental and civic grounds, he maintained, this was the right view.

The whole question turns on the comparative safety to mother and child. That method will be the best which preserves both lives, but in the effort to save the child the mother should not be subjected to unnecessary dangers, immediate or remote. While it is generally conceded that surgical treatment may, with due regard to the mother's safety, be largely extended, there is a difference of opinion as to the surgical measures which should be employed. Each method has, no doubt, its legitimate sphere, but no operation, however legitimate in itself or advisable in suitable conditions, should be undertaken when the conditions are such as to expose the mother to undue risk.

Schauta's wide experience in the treatment of contracted pelvis gives to his views an exceptional importance. In hospital practice, and where the treatment can be carried out from the very commencement, the method of treatment which he thinks should be looked upon in the future as typical is the following:—(1) In cases with a conjugate above $3\frac{1}{4}$ inches there is a possibility of spontaneous birth, and therefore expectant treatment should be adopted. Schauta's statistics show that spontaneous delivery is more frequently possible in contracted pelvis than is generally supposed. In 5288 cases of contracted pelvis labour terminated spontaneously in 77·8 per cent. In the management of these cases labour should be left as long as possible to the natural powers. Difficulties, and even failure to deliver, are often due to premature interference. If the natural powers fail, then only those operations should be performed which will most likely save both mother and child. (2) In the intermediate degrees of contraction, with a conjugate of 3 to $3\frac{1}{4}$ inches, Cæsarean section is to be kept in view, but in cases bordering on these measurements hebosteotomy is to be considered. In the upper limits the latter operation would be an alternative to spontaneous birth; in the lower, to Cæsarean section. The choice would be determined by the size and hardness of the head, by the strength of the pains, and by the general condition of the patient. (3) In a conjugate under $2\frac{3}{4}$ inches Cæsarean section is absolutely indicated: if the case be aseptic, with suture of the uterus; if septic, with total extirpation or supravaginal hysterectomy. These

methods should be looked on as typical, and all other methods hitherto used in the treatment of contracted pelvis, including induction of premature labour and the application of forceps above the brim, as atypical.

Tweedy, who takes up an even more advanced position, sums up his views as follows:— (1) "Induction of premature labour is never advisable." (2) "Perforation is not permissible unless the child is dead." (3) "Turning should never be employed as a treatment for contracted pelvis." (4) "In the greater degrees of contraction time should not be wasted in an endeavour to obtain natural delivery." (5) "On the other hand, in the lesser degrees ample time should be given the woman to enable her to deliver herself, if possible. Eight or ten hours may be necessary for the moulding of the head, and interference should not be considered until there are evidences of fœtal or maternal distress. . . . Walcher's position should not be forgotten as an aid to fixation of the head." (6) "High forceps should never be applied until all arrangements are perfected for an operation to enlarge the pelvis. It is, in my opinion, a pity to proceed to the latter expedient until forceps have been tried tentatively."

From the discussion that took place at the meeting of the Harveian Society, and from the criticisms on Tweedy's paper in the obstetrical section, it is abundantly clear that his views do not represent the considered judgment of the leading obstetricians of this country. Criticism was chiefly directed against his attitude towards the induction of premature labour, which he described as an obsolete procedure. It will be noted that Schauta does not include this method in his scheme of treatment, although he expressly states that he regards it as "a justifiable and thoroughly established operation in contracted pelvis." This was the view adopted by every one of those who took part in the discussion both on Tweedy's and on Blacker's paper. It was on this question that the discussion mainly centred; and not a single speaker was in favour of the removal of the operation from the place it has long occupied in the treatment of contracted pelvis. Statistics and personal experience were advanced to show the favourable results obtained by this method, but the space at our disposal will not permit of their consideration.

Blacker, after a comparative estimate of the results of induction and pubiotomy, computed that the maternal mortality of the former was under ·5 per cent. while the fœtal mortality was 25 per cent. For that, he said, we were asked to substitute an operation which, though it saved 15 to 20 per cent. more children, had a maternal mortality of 2 to 3 per cent. and a morbidity of from 40 to 60 per cent.

Professor Spencer, the strongest advocate for the retention of induc-

tion, said that he could not allow that it was an obsolete operation. "He had been practising induction for twenty-three years and was more in favour of the operation than ever." The writer's experience is in entire agreement with that of Spencer. He has had the most satisfactory results from this method, which has the advantage that it is a comparatively simple procedure and can be safely carried out by those who have not had the opportunity of acquiring the experience necessary for surgical treatment.

Although thus strongly in favour of the retention of the induction of premature labour as a method of treatment in contracted pelvis, we are convinced that a comparison of the results with those of pubiotomy is both unnecessary and useless. The two are supplementary, not rival, operations. If, as is probable, pubiotomy will never be an operation of election, it will not come into competition with the induction of labour. Its indication is, where the forceps having failed it affords the only alternative to craniotomy on the living child. In these circumstances it is a valuable operation, and one that deserves a place among the methods of treatment in contracted pelvis.

PHYSIOLOGY.

By T. H. MILROY, M.D., F.R.S.E.,
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Recent Work on the Ductless Glands.

Adrenalin and Sympathetic Innervation.—As is well known from the researches of Langley, Elliott, and others, adrenalin, when applied to a tissue supplied by sympathetic fibres, produces the same effects as stimulation of the sympathetic supply to the part. Lewandowsky showed that intravenous injections of adrenalin produced very distinct dilatation of the pupil, whereas the direct application of adrenalin to the eye did not produce this effect (Boruttau). Meltzer and Auer then showed that the action on the pupil could be produced by direct application if the superior cervical ganglion were first removed, and Loewi in some later investigations proved that the removal of the pancreas had the same effect. Emil Zak (*Pflüger's Archiv. f. die gesammte Physiologie*, Bd. cxxxii. p. 147) investigated the effects of adrenalin on the pupil after various intestinal lesions. He injected alkaline solutions of different strengths into various parts of the alimentary canal and found that injuries of the duodenal mucous membrane so produced led to a transitory glycosuria and also gave Loewi's pupil reaction, while injuries of the large intestine did not do so. On a more careful study of the effects produced by abdominal lesions, he found that the

pupil reaction could be obtained even after comparatively slight disturbance of the alimentary canal, as for example after making a gastric or intestinal fistula.

According to Biedl and Offer the pupil becomes sensitive to adrenalin after a thoracic duct fistula has been made and the lymph withdrawn. They therefore conclude that the substance which renders the iris refractory to adrenalin is normally present in the lymph, and with its removal the action on the pupil becomes evident. After feeding with thyroid gland substance the adrenalin pupil effect is also obtainable.

Zak also refers to certain observations which he made on man. He found that in the majority of abdominal operations the adrenalin pupil reaction could be obtained, especially in those in which the operative interference was of a similar kind to the experiments in animals above mentioned.

Fröhlich and Loewi (*Archiv. f. die Experiment. Path. u. Pharmak.*, Bd. lxii. p. 159), continuing their researches on the functions of the sympathetic system, investigated the nature of the action of cocain on the iris, bladder, and blood-vessels. They showed that both the intensity and duration of the effects produced by intravenous injections of adrenalin on blood-vessels, bladder, and iris were increased by a preliminary injection of cocain. They also showed that the subcutaneous injection of a minimal dose of cocain increased the very slight effects produced by subcutaneous injection of adrenalin.

The Functions of the Pituitary Body.—Harvey Cushing in a paper read before a combined meeting of the American Physiological Society and Section K of the American Association for the Advancement of Science, Boston, 28th December, 1909 (*The American Journal of the Medical Sciences*, April 1910), gives a concise account of the more recent work on this subject. In the first place, he refers to the results obtained by Schäfer, Howell, Halliburton, and others employing injection methods. As is well known, Oliver and Schäfer showed that the glandular extract, even when raised to the boiling point, leads to a rise in blood-pressure, and subsequently Howell showed that the active substance was confined to the posterior lobe and its epithelial investment. The diuretic effects of posterior lobe extracts was later observed by Schäfer and Magnus; and Halliburton, Candler, and Sikes have recently shown that the same effects are produced by extracts of the human pituitary. No such physiological reactions have been observed after the injection of anterior lobe extracts, although a slight pressor effect has been observed in partially thyroidectomised animals and a rise in temperature of 22° to 44° C. in animals suffering from hypopituitarism. Crowe and Cushing studied the effects upon nutrition of repeated injections of the entire gland, or of posterior lobe or anterior lobe alone. Extracts of the entire gland or of the posterior

lobe alone when administered for long periods led to a progressive emaciation, often with marked degenerative changes in the spleen and central necroses in the liver, but no definite results were obtained by repeated daily hypodermic injections of anterior lobe extracts either in puppies or in adult animals in the cachexia hypophyseopriva stage. Schäfer has, however, observed increased growth in white rats fed upon the anterior lobe, and later experiments of Goetsch tend to give support to these observations.

In the second place, Cushing reviews the work which has been done on the effects of removal of the gland. After referring to Horsley's negative results, he gives a short account of Paulesco's experiments and their results. The Italian investigator found that the removal of the gland led to a peculiar train of symptoms, inevitably followed by death in the course of two or three days. During the past year Cushing, Crowe, and Homans have investigated carefully a series of a hundred hypophysectomies. They found that the acute symptoms of cachexia hypophyseopriva do not occur in puppies until a period varying from ten days to three weeks after the operation, and also that a separation of the stalk need not be fatal because the gland may become reattached with an almost normal physiological relation to the infundibulum. Loss of the posterior lobe leads to no obvious disturbance, whereas removal of the anterior lobe alone is equivalent to removal of the entire gland. Preceding the cachexia, there may be a transient glycosuria with or without polyuria. The onset of symptoms is characterised by inactivity, with a little stiffness and unsteadiness of gait, arching of the back with incurvation of the tail, and lowering of body temperature. Within a short time there is a further fall in temperature, a slowing of the pulse and respirations, and various symptoms not unlike those of tetany. The animal becomes more and more lethargic, finally comatose, with slow pulse and slow deep diaphragmatic respirations. The fall of temperature before death may be extreme—20° C. or lower. Striking histological changes were observed in the thyroid and testis.

Partial loss of the anterior lobe in puppies led to a persistent infantilism, and in adult animals to an apparent reversion to the infantile type, along with great development of adipose tissue. Cushing suggests that the glycosuria which occurs may be due to secondary structural changes in the islands of Langerhans, and the adiposity to a testicular or ovarian disturbance.

In the third place, the author refers to changes in the pituitary secondary to lesions of other ductless glands, as for example the enlargement which is seen in castrated horses and in rabbits after thyroidectomy. Herring found the chief alteration in the pars nervosa, pars intermedia, and ependymal cells of the third ventricle.

In the fourth place, the functional disturbances produced by disease of the gland are discussed. Marie called attention to the association of acromegaly with tumours of this gland, and subsequent writers have mentioned numerous metabolic disorders associated with such disease, *e.g.* glycosuria, polyuria, impotence or amenorrhœa, delay in the appearance of secondary sexual characteristics in the young, accompanied by adiposity, subnormal temperature, slowing of pulse, loss of hair, &c.

The author, in conclusion, summarises the functions of the gland as follows:—It may be regarded as having a double function. The anterior lobe secretion passes into the blood sinuses which traverse this part of the gland, while the hyaline substance, apparently the product of secretion from the epithelial investment of the posterior lobe, enters the cerebro-spinal spaces by way of channels in the pars nervosa (Herring). The latter, although possessing a physiological active principle, as shown by the results of injection, does not appear so essential for metabolism as the anterior lobe, the total removal of the latter leading to a very distinctive train of symptoms both in the young and adult animal. The effects of tumours and disease of the gland are most readily interpreted as due to interference with a glandular secretion. It is just possible that certain of the symptoms of disease of the pituitary are due to secondary changes in other glands. These secondary changes are more widespread in pituitary disease than in affections of any other ductless glands, showing how vitally important this ductless gland is in the body economy.

PHARMACOLOGY AND THERAPEUTICS.

By FRANCIS D. BOYD, C.M.G., M.D.

Magnesium Sulphate.

During the last few years Meltzer and his co-workers have contributed a number of papers on the pharmacological action of magnesium, calcium and potassium. At first of abstract pharmacological interest, the results have now come to be of definite therapeutic value. The pharmacological experiments were carried out on frogs, rabbits, monkeys, and finally applied to the human subject. In the first group of experiments a magnesium salt in isotonic solution was introduced intravenously, subcutaneously, and intra-muscularly. However administered, the pharmacological action was the same—the same phenomena followed the injection. When introduced in small but toxic doses there followed a paralysis of all voluntary movements, a diminution of the reflexes and anæs-

thesia, but respiration remained unaffected. In lethal doses, however, death occurred from respiratory failure. For rabbits 1·5 to 1·75 grms. per kilo of body weight proved an anæsthetic dose. After such a dose the animal remained in a state of deep sleep and complete muscle relaxation for hours. Waking was abrupt. When the solution of a magnesium salt was concentrated or was rapidly introduced into the circulation, the heart was stopped before it could convey the salt to the muscles or central nervous system. The magnesium action could only be obtained after mouth administration if a previous double nephrectomy had been performed. Direct application of a weak solution of magnesium sulphate to the medulla produced complete paralysis, the animal holding itself "as if its body and head were separate."

Spinal injections of magnesium salts were carried out on apes and on man. On the injection of a medium dose sensibility and motility became completely suspended for some hours. With a larger dose there followed complete unconsciousness, but the respiration was sufficient. Still larger doses produced death from respiratory failure, but death could be averted by artificial respiration. No danger to the circulation was noted from this method of administration. In man it was demonstrated that the subcutaneous injection of magnesium sulphate was followed by deep narcosis lasting some hours; consciousness and sensibility to pain completely disappeared, but not all movement. The injection was in fact not accompanied by any curara-like action. Calcium is directly antagonistic to magnesium. This can be illustrated by a striking experiment. If a rabbit be injected subcutaneously with, for every kilo of weight, about 7 c.cm. of a 25 per cent. solution of magnesium sulphate, it will become completely anæsthetised and paralysed. If now one injects into a vein 6 to 8 c.cm. of a 3 per cent. calcium chloride solution, in a short time there is a very striking change. The breathing, which was shallow, becomes deeper and quicker, the lid reflex returns, the paralysed animal makes an effort to turn round, often even before the calcium injection is fully administered. The natural position is rapidly assumed, and the animal, a few minutes before at the point of death, will hop away if its tail be nipped. This rapid restoration will take place even after respiration has ceased, provided the heart is still beating. Such a rapid antagonistic action is almost unique in pharmacological literature.

The very striking results obtained by Meltzer and his colleagues have been now utilised therapeutically. The unsatisfactory

results obtained in the treatment of tetanus and the apparent uselessness of anti-tetanic serum have long been a favourite theme with the anti-vivisectionists. Phillips, in an interesting paper contributed to the Royal Society of Medicine, discusses the treatment of tetanus by the intra-spinal injection of solution of magnesium sulphate. In the Government Hospital, Cairo, during three years, 1906 to 1908, twenty-nine cases of tetanus were admitted and twenty-three died, giving a mortality of 75·8 per cent. The disease is common and very fatal amongst native Egyptians, notwithstanding the use of antitoxin. Since the introduction of the magnesium sulphate injections seven cases have been treated and three proved fatal. All the fatal cases were extremely acute. Taken with other reported cases, we get a total of twenty-eight with twelve deaths, a mortality of 42·8 per cent., a very distinct improvement on former figures. The technique of the treatment is simple. A 25 per cent. solution of magnesium sulphate is sterilised and injected into the lumbar spinal meninges, allowing first a little cerebro-spinal fluid to escape. It may be necessary to administer chloroform to abolish opisthotonos before the injection can be carried out. The patient should be propped up during the injection to prevent the fluid extending to the medullary region, as respiratory paralysis might occur. The dosage of the magnesium sulphate solution is 1 c.cm. for every 25 lbs. of body weight, roughly speaking 5 c.c. to 6 c.cm. for an adult, 2 c.c. to 3 c.c. for a child. The injections should be repeated as necessary. The action of the injections is entirely in the relief afforded by the diminution of spasm and diminished rigidity. The results, so far, are very encouraging, and justify a wider use of the treatment.

Marinesco reports the treatment of four cases of Sydenham's chorea with magnesium sulphate injections, and found that they exercised a remarkable sedative effect on choreic movements, and that by this treatment the disease completely disappears after a few days, and that the results are superior to those obtained by any other method of treatment.

Digitalis.

At the present time when so much is heard of the physiological standardisation of medicinal substances, a communication by Chevalier to the Therapeutic Society of Paris on the method of Focke for the standardisation of the galenical preparations

of digitalis seems of interest. Focke's method is very widely used by manufacturing chemists. It consists in the injection into the lymph sac of a frog of a quantity of a one-tenth infusion of the leaves of digitalis sufficient to arrest the heart in seven to twenty minutes. The time of cardiac arrest is noted. A formula is thus obtained

$$V = \frac{p}{d \times t}.$$

p = the weight of the frog in grammes, t = the number of minutes required for arrest of the heart, d = the dose of infusion injected in c.cm. For example say a frog weighing 30 grms. shows arrest in twenty minutes with a dose of 0·3 c.c. infusion then

$$V = \frac{30}{20 \times 0{\cdot}3} = 5.$$

The value or V of the digitalis leaves would thus be five, and Focke estimates that a good sample of leaves should show a value somewhere near five.

Chevalier casts grave doubts on the accuracy and consequent value of the method, and in his contention he is supported in a communication by Wiki of Geneva. Both find that even with the strictest precautions as regards selected time of observation and variety of frog, there will be marked variations in results. Given the same weight of frog and the same preparation of digitalis, there will be marked variations in the time of production of cardiac arrest. Judging from a large number of experiments by both observers the frog's individuality seems the predominating factor. Wiki "continues to believe that the frog, unless disciplined like a Prussian, is a deplorable 'mêtre' in pharmacology. He shows well the kind but not the quantity of a pharmacological action.'

Gunn still further discredits the frog hitherto so useful to the pharmacologist. In investigating the influence of certain alkaloids upon the peripheral vessels, he finds essential differences between the blood-vessels of the frog and the blood-vessels of mammals in their reaction to certain alkaloids. Three alkaloids—apocodeine, quinine and yohimbine—which have been shown by other observers to dilate the blood-vessels when perfused through the surviving organs of mammals contract the blood-vessels of the frog. The rule, therefore, that the peripheral action of a pharmacological agent on the blood-vessels of the frog is qualitatively similar to its peripheral action on the blood-vessels of mammals is not

invariable. Hence deductions cannot be drawn as to effects of substances on the blood-vessels of mammals based only on experiments on frogs.

The pharmacological action of digitalis has been the subject of a somewhat warm discussion. Etienne, discussing digitalis preparations and their derivatives, concludes that all the preparations and derivatives of digitalis, as far as their action on the rhythm of the heart is concerned, give at first an infrequency of the pulse, which is followed, if the dose be lethal, by an acceleration of the cardiac beat with diverse irregularities. Digalin gives less intense inhibition than the others. The fluid extract, digitonin and digitalin, are most energetic in their inhibitory action; the infusion was found very variable. Etienne concludes that with the modification of the pulse rhythm there is paralysis of the vagus, either central or peripheral, and as digitalis, in whatever form employed, shows itself incapable of inhibiting the heart in the vagotomised dog, one must conclude that inhibition is due to a central action and must exclude the peripheral nerve mechanism. Kochmann deals at length with Etienne's observations, especially criticising the dose employed, and the absence of control observations with vagal stimulation and with the use of atropine. It must be admitted that Kochmann's criticism of Etienne's work is just, and that we can still hold that much of the slowing of the cardiac rhythm after the use of digitalis in therapeutic doses is due to peripheral vagal stimulation, though central action may have a certain influence.

Ergot.

There is probably no substance in pharmacy and pharmacology around which there is more confusion and contradiction than can be claimed for the literature and teaching of ergot. A medicinal substance of prime importance to the clinician, yet the chemist and pharmacologist have still much to clear up in its chemistry and action.

Cronyn and Henderson, discussing ergot, come to certain conclusions which are of interest to the clinician. They find that the galenical preparations contain considerable amounts of the active principles, but do not show any great or marked action when given by the mouth. Ergotoxine, which has been separated, is a highly active alkaloid, and has the properties most desired in medicine. It brings about a long enduring contraction of the walls of the arterioles and increases the movements of the uterus. This action, however, is feeble when it is administered by the

mouth, but more marked on subcutaneous injection and much more marked when given intravenously. They advise its use in shock or post-partum hæmorrhage, but here, as a rapid action is desired, it should be administered intravenously. In hæmorrhage from the pulmonary vessels, the administration of ergot seems irrational. No doubt the initial vascular contraction is manifested in the pulmonary vessels, but the maximum vascular constriction is in the splanchnic area, and there is therefore a rise in pressure in the pulmonary vessels and a passive congestion of the lungs. Therefore the use of ergot in hæmoptysis is irrational. The same reasoning applies to hæmorrhage from the intestinal tract.

References.—Meltzer, *Deutsch. med. Wochenschr.*, No. 45, 1909, S. 1963. Phillips, *Proceedings of the Royal Society of Medicine*, Medical Section, 25th January 1910, p. 39. Marinesco, *La Semaine Médicale*, 18th November 1908. Chevalier, *Bulletin Générale de Thérapeutique*, March 1910. Etienne, *Archives de Pharmocodynamie*, xix. 1909, p. 119. Gunn, *Ibid.*, p. 319. Kochmann, *Ibid.*, p. 327. Cronyn and Henderson, *Journal of Pharmacology and Experimental Therapeutics*, vol. i. No. 2, p. 202.

NEW BOOKS AND NEW EDITIONS.

Surgery: Its Principles and Practice. By various Authors. Edited by William Williams Keen and John Chalmers da Costa. Vol. V. Philadelphia and London: W. B. Saunders Co. 1909. Price 30s.

In issuing the last volume of this work the editors state that the original promise of five volumes of 800 pages each, 4000 pages in all, has been more than fulfilled, for the completed work covers nearly 5500 pages.

The first chapter on the Surgery of the Vascular System is by Matas of New Orleans, who is so well known through having put the operative treatment of aneurysm on a new basis. He discusses the surgery of the pericardium, the heart, and the peripheral vessels. The surgery of the arteries is a subject in which American surgeons have done a great deal of important pioneer work. Readers belonging to the Edinburgh school will be gratified to find the work of Syme and Annandale abundantly recognised. Injuries of vessels produced by rifle bullets are discussed in the light of the most recent experience of the Japanese, Russian and German surgeons in the Manchurian War. Matas' article extends to 350 pages, and contains a large amount of new material not to be found in any other text-book. No surgeon can afford to neglect this very important work.

The remaining chapters in the volume are distributed as follows:—

One on the Female Genito-Urinary Organs, by Drs. Montgomerie, Fisher and Bland, extending to 236 pages; Surgical Technique, by Gibbon of Philadelphia; the Ligation of the Arteries in Continuity, by Bickham of New York; Operations on the Bones and Joints, by Warbasse of Brooklyn; Amputations, by Bickham; Plastic or Reconstructive Surgery, by Roberts of Philadelphia; the Surgery of Accidents, by Estes; the Parathyroid Bodies, by Charles H. Mayo; the Intracranial Surgery of the Trigeminal and Auditory Nerves, by Fraser of Philadelphia; General Anæsthesia and Anæsthetics, by Hare of Philadelphia; Local and Spinal Anæsthesia, by the late Professor Lennander of Upsala; the Surgery of the Infectious Diseases, by Armstrong of Montreal; the Uses of the X-rays and Radium in Surgery, by Codeman of Boston; the Legal Relations of the Surgeon, by Mr. Carson of the Philadelphian Bar; the Laboratory as an Aid to Surgical Technique and Surgical Diagnosis, by Coplin of Philadelphia; and, finally, the Surgical Organisation of a Hospital, by Albert J. Ochsner of Chicago.

It will be observed that a number of the chapters in this, as in the preceding volumes, are of an original character, and are not usually included in systems of surgery. The illustrations are the best obtainable. Of the work as a whole it may be said that the surgical profession throughout the world is indebted to William Williams Keen, the original and chief editor, for the most complete and valuable system of surgery which has hitherto been published.

The Stomach, Intestines, and Pancreas. By W. C. Bosanquet, M.A., M.D., M.R.C.P., and H. S. Clogg, M.S., F.R.C.S. Pp. 665. 110 Figures. London: John Bale, Sons & Danielsson, Ltd. 1909. Price 12s. 6d.

This publication forms the second volume of the medico-chirurgical series, edited by Mr. James Cantlie, F.R.C.S., and written by physicians and surgeons in collaboration. The four sections of the book deal respectively with Surgical Anatomy, the Stomach, the Intestines, and the Pancreas. Hernia is treated only in so far as it leads to intestinal obstruction, and peritonitis as it arises directly from diseases of the alimentary canal. The subject-matter is written in a readable style, and is not loaded with trivial or controversial details. Only the principal operations are mentioned, and their scope and main steps indicated. A commendable feature of the book is the inclusion of a brief description of the physiology of the various organs. These paragraphs might, with advantage, be extended; for example, that on sensation of the alimentary canal in which the authors' conception of referred pain is not lucidly described. The importance of physio-

logical knowledge is shown in the choice of site for a gastro-jejunal anastomosis—as near the pylorus as possible, even when the ulcer is in the cardiac end, because this is the lowest part of the stomach during digestion, and the pyloric digestion is retained. Emphasis is laid on the necessity of diminishing oral sepsis, even to the extent of removing carious teeth, before performing a gastric operation. The diagnosis of subphrenic abscess is still left in an indefinite position, but it is stated that a radiogram may show elevation of one side of the diaphragm. A few errors have escaped notice. M'Burney's point is described as midway between the umbilicus and the anterior superior spine. Gastric ulcer is said to be "almost invariably" accompanied by vomiting. Again, they say: "A metastatic inflammation of the pancreas occurs in connection with mumps, analogous to the inflammation of the testicle (or rather of the epididymis) which complicates this disease." It is orchitis, and not epididymitis, which occurs occasionally in mumps. Of the figures, the majority are diagrammatic, and they show with clearness the points they are meant to illustrate. In a short appendix are given several prescriptions useful in various conditions of the gastro-intestinal tract.

Infancy. Edited by T. N. Kelynack, M.D. (National Health Manuals. Culley). 1910. 1s. net.

The appearance of the series of manuals of which this book is the first is one more indication that we in this country are at last clearly realising the dependence of national efficiency and progress on national health.

Outside the ranks of the official hygienists there are many semi-official organisations pledged to the task of redeeming the British folk from the slough of degeneracy in which so many of them at present wallow. It is for social workers such as these that the present series of booklets chiefly caters. The volume on *Infancy* is well done. It deals with the various outstanding details of its subject in a series of chapters, each written by a specialist in that branch.

Not only are details given concerning the care of the individual baby, but special chapters deal with such broader social questions as the establishment of milk-depôts, crèches, schools for mothers, and the like.

Too technical terms are avoided, and, as is eminently desirable in a book which will come largely into the hands of the general public, stress is constantly laid on health rather than on disease—on constructive suggestions for the establishment and maintenance of the *mens sana in corpore sano*, rather than on unprofitable details of pathology.

To every doctor who realises the new social *rôle* that the profession

is destined to enter upon in the near future this book may be cordially recommended.

The Treatment of the Diseases of Children. By CHARLES GILMORE KERLEY. Second Edition revised. Philadelphia and London: W. B. Saunders Co. 1909.

THE demand for a second edition of Kerley's work on the Treatment of the Diseases of Children, within a couple of years of its publication proves that the long-felt want for a book of this description has been satisfactorily met.

The author describes in a clear and practical manner the various therapeutic and other measures to be adopted in the treatment of infantile maladies. Perhaps what most impresses the reader is the resourcefulness of the methods of treatment recommended. Every aspect of treatment is discussed, and no detail is regarded as too insignificant for consideration. The remarks with regard to the prevention of disease and the management of cases between attacks of illness are clearly and concisely expressed, and are full of common sense.

We regard as specially worthy of mention the chapters dealing with the summer management of infants, gymnastic therapeutics, and heredity and environment, which draw attention to important points in the management of children, and which are not usually referred to in the ordinary text-books. A previous review of this work having so recently appeared, it only remains to say that it is in every respect a valuable addition to pediatric literature, and should find a niche in the library of every general practitioner.

Constipation and Allied Intestinal Disorders. By A. HERTZ, M.A., M.D.(Oxon.). Pp. 338. 34 Illustrations. London: Hodder & Stoughton. 1909. Price 10s. 6d. net.

THIS book is the outcome of careful, patient and intelligent scientific research into the physiology and the pathology of intestinal movements and defæcation. The causes of constipation at different periods of life and the numerous symptoms which may be produced are dealt with in detail. The skiagrams which were taken for diagnostic purposes after the administration of bismuth are of much interest. The oxychloride of bismuth was the preparation used, and the reasons for the choice of this bismuth preparation are explained. The treatment is considered under various headings, viz. prophylactic, dietetic, drugs, hydrotherapy, Swedish gymnastics and massage, electricity, and operation. There is room for difference of opinion on a few of the questions discussed, such as the causes of flatulence, cause of coldness of the extremities in con-

stipation, point of entrance of the bacillus coli communis in pyelitis, its treatment, the causes of muco-membranous colitis. The book is an admirable exposition of the subject treated, and will fully repay a careful perusal of it by all who are engaged in the practice of medicine.

A Text-Book of Medical Treatment (Alphabetically Arranged). By William Calwell, M.A., M.D. Pp. 630. London: Edward Arnold. 1910. Price 16s. net.

This ample volume is devoted entirely to the subject of therapeutics, which seldom receives adequate treatment in the modern text-book of medicine. It is approached not so much from the standpoint of theory or principles, as from that of practice and convenience. The subjects are arranged in alphabetical order, and abundant cross-indices make for rapidity of reference. It is therefore a highly practical book, and suited to the needs of the practitioner. It is not marred by excessive condensation, a common flaw in books of this kind. Under the various headings will be found a most thorough discussion of treatment from every point of view—medicinal, dietetic, hygienic, &c. Thoroughness is the signal feature of the book, and is especially seen in the attention to the minutiæ of treatment, to the practical technique of the various forms of therapy, and to the small but important details of sick-room management. This regard for detail greatly enhances the practical value of the book. Further, the volume is impressed with the individual stamp. The character of mere compilation is absent. Everything included has been submitted to the mature judgment of the author and to the test of his experience.

Transactions of the Bombay Medical Congress, 1909. Edited by Lieut.-Colonel Jennings, I.M.S. Pp. 631. Bombay: Bennet, Coleman & Co. 1909. Price £1, 1s.

This volume presents, with numerous illustrations and coloured plates, a full report of the proceedings of the Congress held in Bombay early in 1909. Those responsible for the carrying out of the project wisely determined that it should be of an international nature, with the result that delegates attended, or forwarded communications, from all parts of the world, including Great Britain, the Continent of Europe, America, the Philippines, Japan, and other countries in the Far East. The delegates included many of the well-known workers in tropical medicine and hygiene, and to quote from the official report of Musgrave, who was deputed to attend by the Government of the Philippines, "In scope, material presented, and in attendance, this was surely the

most successful Congress dealing entirely with the problem of tropical medicine which has ever been held."

In the first section, devoted to cholera, dysentery and allied diseases, many of the communications are of great interest, the treatment of cholera receiving the fullest consideration: and it is interesting to note that great stress was laid, by the practical men assembled, in opposition to the views of various theorists which have lately been made prominent, on the value of opium in the early stages; while another point often overlooked, namely, the abeyance of absorption in the gastro-intestinal canal during the height of the attack, was very properly insisted upon in relation to treatment.

During the Hamburg epidemic it was found that subcutaneous saline infusion gave better results than the intra-venous method. At the Congress it was practically agreed that the intra-peritoneal method was probably the best of all.

The communications on dysentery were unique, and it is certain that some of the views expressed concerning the all-powerful action of vaccines and sera will, in the light of further experience, require revision.

We would commend the article on "Hill Diarrhœa," by Newell, to the consideration of recent writers on the subject in this country, who appear to be unable to differentiate the affection from sprue. The paragraphs on etiology are specially interesting.

Malaria, blackwater fever, plague, kala-azar, and sleeping sickness were dealt with in the second section, and, as might be expected from the meeting of so many authorities on these diseases, the communications were of great value and the discussions protracted and edifying. Ticks with biting and non-biting flies received the attention they deserve, the paper by Howlett on "Sand Flies," which have recently been proved to be carriers of infection, being particularly good

Regarding snake bites, it was shown that though the efficacy of serum treatment has been absolutely proved by laboratory experiments, it is still, owing to the difficulties which attend its application, of little practical use.

Many interesting communications were made on leprosy, including one by Unna on the differentiation of living and dead bacilli by double staining. From personal experience of these methods, we would advise workers not to be disappointed if they fail to produce the beautiful results shown in the coloured plate, so much depends on the process to which the material has been subjected previous to staining.

It is interesting to note that the members of the Congress agreed with the opinion held by so many others concerning the etiology of beri-beri. It is apparently definitely proved that the use of uncured rice is one of the principal factors in the causation of this disease.

Owing to climatic and other conditions, sanitary methods in the tropics differ in many respects from those of temperate climates: while the very exhaustive communications made on this subject in Section IV. will specially appeal to those engaged in sanitary work in hot countries, they will be read with interest by public health workers throughout the world.

It is well known that officers of the Indian Medical Service are afforded opportunities of practising surgery unequalled by any other service, and the valuable papers read in Section V. show that they are not content to follow the beaten track, but are capable of initiating and carrying out improved forms of operative treatment. The articles on "Cataract" and "Vesical Calculus" are worth perusal by surgeons at home.

It has of late become the fashion in some quarters to decry the Indian Medical Service and to hint, more or less broadly, that it had lost its former high position: but the volume before us shows that a service which is capable of carrying through such a Congress, attracting delegates from all parts of the world, and demonstrating to them the vast amount of practical and research work performed by its members, is far from moribund. In addition, it is pleasing to note that under an enlightened ruler the Government of India has thrown off its hostile attitude to medical research, and has by the establishment and endowment of thoroughly well-equipped research and other laboratories in Calcutta, Bombay, Kasauli, and elsewhere afforded the many capable men in the ranks of the service opportunities of carrying out much valuable work, the results of which will prove of incalculable benefit not only to India but to other tropical countries.

A Practical Study of Malaria. By William H. Deaderick, M.D., Arkansas. Pp. 402. Philadelphia and London: W. B. Saunders Co. 1909.

It is to be regretted that the author has displayed such a want of originality in the selection of a title for his book. The one he has adopted so closely resembles that of the well-known work by Christopher and Stephens (*The Practical Study of Malaria*) that some confusion is sure to result.

In the preface it is stated that the book is written "by one engaged entirely in private practice, largely in country districts in the home of the severer forms of the disease." As might be expected, the author is able to give ample proofs of his wide clinical experience. In addition, the views of others on certain points are fully considered, as evidenced by a list of references, nearly 500 in number.

Blackwater fever receives full consideration, and the author claims

that he describes, for the first time in our language, the parthenogenetic cycle of the malarial parasite in its relation to latency and relapse.

The coloured plates and the illustrations of the pathological conditions found in blackwater fever and malaria are extremely good, but the same cannot be said of the photographs of mosquitoes. It is difficult to understand why only distorted specimens should have been selected for the photographs, when it is so easy to prepare specimens showing clearly all the important parts.

Unfortunately the example of other recent American writers on tropical diseases is followed in taking too local a view of the subject, and considering it purely from the basis of clinical experience gained in America.

For instance, kala-azar, trypanosomiasis, and Malta fever are among the diseases presenting difficulty in a differential diagnosis of malaria at home, in India, Africa, and elsewhere. But, presumably, because the author has no personal experience of them in America, they are not even mentioned, though it is important to note that a new form of human trypanosomiasis has recently been discovered in Brazil. In the West Indies mistakes in diagnosis are frequently made between malaria and the fever associated with filariasis, and this is another condition to which no reference is made. The list might be extended, and other defects pointed out, but it is sufficient to say that the work, while possessing many good points and reflecting great credit on the author (working, as he must have done, under great difficulties), can hardly be classed as a standard work of reference.

The Sanitary Officer's Handbook of Practical Hygiene. By C. F. Wanhill, Major, R.A.M.C., M.R.C.S.(Eng.), L.R.C.P.(Lond.), Assistant Professor of Hygiene, Royal Army Medical College; and W. W. O. Beveridge, D.S.O., Major R.A.M.C., M.B., C.M. (Edin.), Analyst to the Army Medical Advisory Board. Pp. 151. London: Edward Arnold. 1909. Price 5s.

There is no end to the making of books on Public Health, and the reviewer remembers the time when the honoured Parke's *Hygiene* was almost the only one read. The field of hygiene has since that time become a very wide one, with monographs dealing with the specialised subjects of chemical analysis, bacteriology, sanitary engineering, tropical diseases, vital statistics, school hygiene, &c. This volume is intended to supply a want which, as teachers, they have experienced. It is not easy for the student to have access even to all the books which relate to analytical chemistry and bacteriology, and this book has been framed to put before the student methods which the authors indicate they have found to be sufficient for training in hygienic

laboratories, the Royal Army Medical College, both for military purposes and for preparation for examinations for Public Health diplomas.

The methods for examination of water sewage, air, foods, beverages, are briefly but clearly set forth. With reference to the value of chemical analysis as a test for the purity of water, the opinion of the authors is noteworthy—"The quantitative is of very little value. If, however, a definitely excretal organism, such as B. coli, is taken as an indicator, from the number of these organisms present, taking into account the surroundings of the water-supply and the information yielded by inspection of that supply, and by the chemical examination, a reliable opinion can be given of the probable fitness or otherwise of the water for human consumption." This may fairly be taken as a "guarded prognosis" not unjustified, as those who have had much experience of water analysis from the health officer's point of view well know. After all, a careful sanitary survey of the water-supply is the most reliable test.

The absence of illustrations of the various kinds of apparatus used in chemical and bacteriological research is a decided want in this book, but the authors assume that the reader has had previous training, and will only use this volume to refresh his memory with regard to details. Details, however, count for much in setting up the apparatus needed, say, for the ammonia estimation processes, various processes for estimating CO_2 in air, and the complicated methods of food analysis.

To candidates for certain examinations in Public Health Laboratory work it will certainly be a good "refresher." A considerable number of errata will doubtless disappear in future editions.

NOTES ON BOOKS.

Dorland's Illustrated Medical Dictionary is one of those books which we find constantly useful, and we always have it handy. The cost is nineteen shillings, and if we might offer a suggestion to the publisher, it would be that they might drop the illustrations and reduce the price. Not that the illustrations are not good, but they are not essential to what is really a very valuable work.

Physiology of the Special Senses, by M. Greenwood, Junr., M.R.C.S., L.R.C.P., F.S.S. (Edward Arnold), offers the student a medium between the short text-book and the large handbook. The material is well arranged and clearly stated. In dealing with unsettled problems, a reserved, if somewhat subjective, attitude is maintained. The chapter

on Hearing is perhaps the weakest, and that on Space the scrappiest. The suggestions towards a theory of contrast (p. 212-3) might well have been omitted. Otherwise the volume is a useful one. Interesting summaries of the ancient theories regarding the senses are given.

The publication of a fourth edition of Dr. Ralph Winnington Leftwich's *Index of Symptoms with Diagnostic Methods* (Smith, Elder & Co.) is sufficient proof of its practical utility and value. Although the character and scope of the book may be gathered from its title, we may mention that if, for example, the reader turns up the heading "Epistaxis," he finds 58 possible causes—from "arterio-sclerosis" to "worms"—are enumerated; while no less than 87 causes of "General Dyspnœa," and 105 causes of a "Markedly Raised Temperature" are mentioned. The book contains much useful information, especially in the sections upon the analysis of the urine and the examination of the nervous system. An index of synonyms will prove helpful to anyone wishing to know the meaning of such terms as Alibert's disease, Chabert's disease, Jaksch's anæmia, Legal's disease, and Rummo's disease.

The use and advantage of such compressed information in regard to any department of medicine as Dr. E. G. Younger gives in his book, *Insanity in Everyday Practice* (Baillière, Tindall & Cox), is always open to question, but the demand for such works perhaps shows their necessity. The book, which appears in its second edition, is meant for the use of the busy general practitioner who has no time to read any of the larger treatises on mental disease. It may be called an emergency book, where useful information can be readily got. It is well arranged for this purpose, is clearly written, and so far as it goes, is reliable. Many cases of insanity are urgent in character and have to be dealt with at once; they are often attended with responsibility and difficulty. A man in a hurry has no time to analyse their symptoms, but has to act at once. Under such circumstances Dr. Younger's book will be found a handy manual. But we advise the practitioner who has used it for that purpose to consult some of the larger and up-to-date treatises, the perusal of which will give him a real interest in the psychiatric problems he has to deal with, when he has provided for the immediate emergencies of his cases.

A Code of Rules for the Prevention of Infectious and Contagious Diseases in Schools, issued by the Medical Officers of Schools Association (Churchill), has now reached a sixth edition, and of the present issue it is only necessary to say that a thorough revision has been carried out, and that the appendix on Disinfection by Mr. A. C. Houston, D.Sc., has also been revised.

A Manual of Sanitary Law, by Robert P. M'Donnell, D.P.H., F.R.C.S. (Edward Ponsonby), has been compiled solely with the view of assisting candidates who are preparing for Public Health qualifications. It is very true that much valuable time is spent in culling the salient points from the mass of details embodied in the various Public Health Acts, and such a résumé as the present will do much to refresh the memory of not only the student but of the medical officer of health. The more important provisions of the various Acts are stated clearly and concisely. In addition, the duties of the medical officer of health and of the sanitary inspector, as laid down by order of the Local Government Board, are summarised. Examples of the questions set by six different examining bodies are appended.

Lessons on Elementary Hygiene and Sanitation, with Special Reference to the Tropics, by W. T. Prout, C.M.G., M.B. (J. & A. Churchill), was originally intended to form an elementary text-book for the use of schools in the tropics, but in the second edition it has been extended and brought up to date, and while it may be used in schools, it deserves to find a larger circle of readers.

It is a well-known fact that one of the most important measures in preventing the spread of disease, in the tropics or elsewhere, is to educate the mass of the people in sanitary matters, so that they may afford valuable assistance in carrying out preventive measures, not only by attending to the sanitary conditions of their own surroundings, but as a result of such education, being able to appreciate, and not resent, measures undertaken by the authorities.

The book, which contains much valuable information put forth in a clear, popular style, should find a place in the outfit of all persons proceeding to tropical countries.

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